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Our Customer decides
the Quality of products

Jaypee
Ferro Metal (India)

HOUSE OF INDUSTRIAL RAW MATERIALS

Web. : www.jaypeeferrometal.com

ABOUT US

Jaypee Ferro Metal is a leading Manufacturer & Supplier of all Ferrous & Non-Ferrous Metals. As a pioneer and leader in the manufacturing industry, **Jaypee Ferro Metal** is at the forefront of technology and research. We are constantly innovating, listening to the rapidly changing market and giving the consumer the best value for his money.

We have great pleasure to introduce ourselves as one of the leading Manufacturers & Suppliers of Hastalloy C 276, 17-4 PH, XM 19, Titanium, Duplex Steel, SS 303, EN 1A, Stainless Steel, Carbon Steel, Alloy Steel, Copper, Brass, Monel, Inconel, Aluminium, Lead in the shape of Pipes, Tubes, Rods, Sheets, Plates, Wires, Angles, Coils, Strips and the entire range of Pipe Fittings.

Jaypee Ferro Metal is a force to reckon with in the field of manufacturing and exporting premium quality Fittings, & Flanges in Carbon Steel, Alloy Steel, Stainless Steel, Duplex Stainless Steel and Low Temperature Services. We are based in Mumbai (India), the company has scaled incredible heights in business owing to its innovative products. The company's productivity and clients base is always on an upward swing.

We believe that commercial success and corporate responsibility should go hand-in-hand. We must therefore recognise and manage the impact of our business and its contribution to society. Responsible behaviour is not just the ethical way to act.

◆ It helps us to :

Build strong relationships with our customers – which we achieve, for example, by employing and training local workforces. Develop trust in our reliability and integrity – which we are reinforcing, for instance, by developing a global compliance network. Manage risks more effectively – as we do with the social and environmental impact asessments that we carry out in all geographies. establish strong employee engagement.

◆ Why Us

Some of our specialities that make us a profitable business partner for our clients are:

- Superior quality products
- Timely delivery
- Proven execution of small as well as large batch orders
- A design solution to design problem
- Customer focused approach

◆ Our Values

Jaypee Ferro Metal people are:

- Safe
- Ethical
- Innovative
- Responsive
- Quality and cost conscious
- Driven to deliver

◆ Customer Service

Keeping efficient and friendly customer service as the top concern, provides ultimate flexibility in fulfilling each & every customer requirement irrespective of the size of order. Most of our clients are doing business with us since years, which indicates higher levels of customer satisfaction. We always welcome any queries or suggesions from our clients to improve the services and hence to serve them better.

◆ Our Mission

Provide technically sound solutions and create additional value in mutual interest with our customers resulting in being a preferred manufacturer within the Fitting & Flanges sector.

◆ Vision

We help customers develop their energy resources; bringing world class capability and delivering it locally. We promote commercial arrangements that are aligned to our customers' needs, allowing us to deliver more value to the customer while increasing the returns from our most precious asset – our people.

Product Range

FLANGES

Stainless Steel	:	ASTM A182 F 304/304L / 304H / 316/ 316L / 317 / 317L / 321 / 310 / 347 / 904L etc
Carbon Steel	:	ASTM A105/ A694/F42/46/52/56/60/ 65/70/a350lf3/A350 LF2, et.c
Alloy Steel	:	ASTM A182 F1/F5/F9/F11/F22/F91 etc.
Others	:	Monel, Nickel, Inconel, Hastalloy, Copper, Brass, Bronze, Titanium, Tantalum, Bismuth, Aluminium, High Speed Steel, Zinc, Lead, etc.
Types	:	Weldneck, Silicon, Blind, Socket Weld, Lap Joint,, Spectacles, Ring Joint, Oriface, Long Weldneck, Deck Flange, etc.
Size	:	1/2" NB 24" NB
Class	:	150#, 300#, 400#, 600#, 900#, 1500# & 2500#.

SCREWED & FORGED FITTINGS

Stainless Steel	:	ASTM A182 F 304/304L / 304H / 316/ 316L / 317 / 317L / 321 / 310 / 347 / 904L etc.
Carbon Steel	:	ASTM A105 / A694 F42 / 46 / 52 / 56 / 60 / 65 / 70/ A350 LF3/ A350 Lf2.
Alloy Steel	:	ASTM A182 F1 /F5 /F9 /F11 /F22 /F91 etc.
Others	:	Monel, Nickel, Inconel, Hastalloy, Copper, Brass, Bronze, Titanium, Tantalum, Bismuth, Aluminium, High Speed Steel, Zinc, Lead etc.
Types	:	Elbow, Tee, Union, Cross, CouBushing, Plug, Swage Nipple, Welding Boss, Hexagon Nipple, Barrel Nipple, Welding Nipple, Parraler Nipple, Street Elbow, Hexagon Nut, Hose Nipple, Bend Adapter, Insert, Weldolet, Elbowlet, Sockolet, Thredolet, Nipolet, Letrolet, etc.
Size	:	1/4" NB TO 4" NB. (Socketweld & Threaded)
Class	:	3000#, 6000#, 9000#.

FERRULE FITTINGS

FLANGES

SCREWED & FORGED FITTINGS

BUTT WELD FITTINGS

Product RANGE

BUTT WELD FITTINGS

Stainless Steel	:	ASTM A403 WP 304/304L / 304H / 316/ 316L / 317 / 317L / 321 / 310 / 347 / 904L etc.
Carbon Steel	:	ASTM A234 WPB / A420 WPL3 / A420 WPL6 / MSS-SP-75 WPHY 42/46/52/ 56/60/65/70
Alloy Steel	:	ASTM A234 WP1/WP5/WP9/WP11/ WP22/WP91 etc.
Others	:	Monel, Nickel, Inconel, Hastalloy, Copper, Brass, Bronze, Titanium, Tantalum, Bismuth, Aluminium, High Speed Steel, Zinc, Lead etc.
Types	:	Elbow, Tee, Reducer, Return Bends, Stub Ends, Cap, Collar, Cross, Insert etc.
Size	:	1/4" NB to 32" NB. (Seamless & Welded)
Wall Thickness	:	Sch. SS to Sch. XXS.

PIPES

Stainless Steel	:	ASTM A403 WP 304/304L / 304H / 316/ 316L / 317 / 317L / 321 / 310 / 347 / 904L etc.
High Nickel Alloy	:	Monel, Nickel, Inconel, Hastalloy, Copper, Brass, Bronze, Titanium, Tantalum, Bismuth, Aluminium, High Speed Steel, Zinc, Lead etc.
Carbon Steel	:	ASTM A53 GR. B/ A106 GR. B/API 5L GRADE B/API 5L GR.X 42/ 46 /52/ 56/ 60/65/70/ A333 GR. 3/ GR.6 etc.
Alloy Steel	:	ASTM A335 GR. P1/P5/P9/ P11/ P22/ P91 etc.
Types	:	Round, Square, Rectangular,
Size	:	Upto 24" NB. (Seamless & Welded)
Wall Thickness	:	Sch. 5S to Sch. XXS

QUALITY POLICY

- to strive for customer satisfaction through quality and efficient after sales service.
- All departments are headed by qualified people supported by dedicated work force which in turn ensures quality at all times.
- All the items passes through stringent quality procedures like Materials Testing, Process Control, Testing, Finishing etc.
- Entire team work like a family which ensures responsiblity among the members automatically.
- We are trying to improve our quality in all possible manners keeping in mind that consistent quality shall always take us to the top.
- In recognition of our quality only we have been awarded the coveted ISO 9001:2008 Certification.

THIRD PARTY INSPECTIOIN

Jaypee Ferro Metal (India) can offer you material with Third party Inspection.

The Inspection Agency can be nominated by client or we can arrange as the case may be

Lloyd's Register

TÜV INDIA

SGS

NUCLEAR POWER CORPORATION OF INDIA LIMITED

BHEL
Bharat Heavy Electricals Ltd.

TÜV SÜD ISO 9001

UHDE
Uhde India Ltd.

TATA
TATA Project

PDIL

Larsen & Toubro Ltd.

CHEMICAL COMPOSITION OF STAINLESS STEEL

Grade AISI	Chemical Composition - Per cent									Nearest Equivalent Specification	
	C Max	Mn Max	P Max	S Max	Si Max	Cr	Ni	Mo	Other Element	I.S.	En
301	0.15	2.0 max	0.045	0.040	1.0	16.0/18.0	6.0/8.0	-	-	10Cr 17Ni7	-
302	0.15	2.0	0.045	0.030	1.0	17.0/19.0	8.0/10.0	-	-	07Cr18Ni9	En-58A
303	0.15	2.0	0.045	-	1.0	17.0/19.0	8.0/10.0	-	-	15Cr18Ni9	En-58M
304	0.08	2.0	0.045	0.030	1.0	18.0/19.0	8.0/10.0	-	-	04Cr18Ni10	En-58E
304L	0.030	2.0	0.045	0.030	1.0	18.0/20.0	8.0/10.0	-	-	02Cr18Ni11	-
308	0.08	2.0	0.040	0.030	1.0	10.0/21.0	10.0/12.0	-	-	-	-
309	0.20	2.0 max	0.045	0.030	1.0	22.0/24.0	12.0/15.0	-	-	20Cr24Ni12	-
309S	0.08	2.0	0.045	0.030	1.0	22.0/24.0	12.9/15.0	-	-	-	-
310	0.25	2.0	0.045	0.030	1.50	24.0/26.0	19.0/22.0	-	-	10Cr25Ni12	-
310S	0.08	2.0	0.045	0.030	1.50	24.0/26.0	19.0/22.0	-	-	-	-
314	0.25	2.0	0.040	0.030	1.5to3	25.0/26.0	19.0/22.0	-	-	-	-
316	0.08	2.0	0.045	0.030	1.0	16.0/18.0	10.0/14.0	2.0/3.0	-	04Cr17Ni12Mo2	En 58H
316L	0.030	2.0	0.045	0.030	1.0	16.0/18.0	10.0/14.0	2.0/3.0	-	03Cr17Ni12Mo2	-
317	0.08	2.0	0.045	0.030	1.0	18.0/20.0	11.0/15.0	3.0/4.0	-	-	-
317L	0.030	2.0	0.045	0.030	1.0	18.0/20.0	11.0.15.0	3.0/4.0	-	Tiy5 c Min	-
316TI	0.080	2.0	0.045	0.030	1.0	16.0/18.0	10.0/14.0	2.0/3.0	Ti5xCmin	-	-
321	0.08	2.0	0.045	0.030	1.0	17.0/19.0	9.0/12.0	-	Ti5xcmin	04Cr18Ni10Ti20	En-58C
347	0.08	2.0	0.045	0.030	1.0	17.0/19.0	9.0/12.0	-	Nb/Ta10xCmin	04Cr18Ni10Nb-40	En-58G
430	0.12	1.0	0.040	0.030	0.75	14.0/18.0	0.60	-	-	07Cr17	En-60
446	0.20	1.50max	0.040	0.030	1.0	23.0/27.0	0.60max	-	N-25max	-	-
403	0.15	1.0	0.040	0.030	0.50	11.5/13.0	0.60	-	-	-	-
410	0.15	1.0	0.040	0.030	1.0	11.5/13.5	0.60	-	-	12Cr13	En-58A
410S	0.08	1.0	0.040	0.030	1.0	11.5/13.5	0.60max	-	-	-	-
414	0.15	1.0max	0.040	0.030	1.0	11.5/13.5	1.25/2.5	-	-	-	-
420	Over .15	1.0	0.040	0.030	1.0	12.0/14.0	0.60	-	-	22Cr13	En56C&D
431	0.20	1.0max	0.040	0.030	1.0	15.0/17.0	1.25/2.50	0.75max	-	15Cr16Ni2	En-57
440A	0.60/0.70	1.0	0.040	0.030	1.0	16/18	-	-	-	-	-
440B	0.75	1.0	0.040	0.030	1.0	16.0/18.0	-	0.75max	-	-	-
409	0.08	1.0	0.045	0.030	1.0	10.5/11.75	0.50max	-	6x%cmin.75max	-	-
440C	0.96	1.0	0.040	0.030	1.0	16/18	-	0.75max	-	-	-
409M	0.028	0.8/1.2	0.030	0.030	1.0	11.0/12.0	0.75	-	T10.25/0.75	-	-
446	0.20	1.50	0.040	0.030	40to75	23.0/30.0	0.50	-	-	N 0.25max	-

pipe dimension in accordance to

NROMA ANSI

Diametro Tubi Size Pipe		Nominal Thickness Number of													
		5S		10S		10		20		30		40		60	
Nominal in inch	Out Side in mm	mm	kg / m	mm	kg / m	mm	kg / m	mm	kg / m	mm	kg / m	mm	kg / m	mm	kg / m
1/8"	10.3	--	--	1.28	0.28	--	--	1.60	0.345	--	--	1.78	0.36	--	--
1/4"	13.7	--	--	1.65	0.49	--	--	2.00	0.580	--	--	2.24	0.63	--	--
3/8"	17.1	--	--	1.65	0.63	--	--	2.00	0.750	--	--	2.31	0.85	--	--
1/2	21.3	1.65	0.80	2.11	1.00	--	--	2.0	0.957	--	--	2.77	1.26	--	--
3/4	26.7	1.65	1.03	2.11	1.28	--	--	2.5	1.500	--	--	2.87	1.68	--	--
1	33.4	1.65	1.29	2.77	2.08	--	--	2.5	1.916	--	--	3.38	2.50	--	--
1 1/4	42.2	1.65	1.65	2.77	2.69	--	--	3.00	2.910	--	--	3.56	3.33	--	--
1 1/2	48.8	1.65	1.90	2.77	3.12	--	--	3.0	3.370	--	--	3.08	4.05	--	--
2	60.3	1.65	2.38	2.77	3.94	--	--	3.0	4.263	--	--	3.91	5.43	--	--
2 1/2	73.0	2.11	3.70	3.05	5.26	--	--	4.00	6.846	--	--	5.16	8.62	--	--
3	88.9	2.11	4.50	3.05	6.45	--	--	4.00	8.423	--	--	5.49	11.28	--	--
3 1/2	101.6	2.11	5.20	3.05	7.40	--	--	4.5	10.838	--	--	5.74	13.56	--	--
4	114.3	2.11	5.61	3.05	8.34	--	--	4.5	12.255	--	--	6.02	16.06	--	--
5	141.3	2.77	9.45	3.40	11.56	--	--	5.00	16.900	--	--	6.55	21.76	--	--
6	168.3	2.77	11.31	3.40	13.82	--	--	6.35	24.150	--	--	7.11	28.23	--	--
8	219.1	2.77	14.78	3.76	19.94	--	--	6.35	33.28	7.04	36.76	8.18	42.49	10.31	53.07
10	273.1	3.40	22.62	4.19	27.83	--	--	6.35	41.73	7.80	50.96	9.27	60.24	12.70	81.46
12	323.9	3.96	33.00	4.57	36.00	--	--	6.35	49.68	8.38	65.14	10.31	79.71	14.27	108.97
14	355.6	3.96	34.23	4.78	41.18	6.35	54.63	7.92	67.98	9.52	81.21	11.13	94.31	15.09	126.51
16	406.4	4.19	41.60	4.78	47.33	6.35	62.58	7.92	77.92	9.52	93.13	12.70	123.18	16.66	160.04
18	457.2	4.19	46.83	4.78	53.18	6.35	70.53	7.92	87.85	11.13	122.12	14.21	155.90	19.05	205.62
20	508.0	4.78	59.22	5.54	68.50	6.35	78.47	9.52	116.97	12.70	154.97	15.09	183.14	20.92	247.79
22	558.8	4.78	63.75	5.54	73.81	6.35	86.42	9.52	128.89	12.70	170.86	--	--	22.22	293.80
24	609.6	5.54	82.60	6.35	94.37	6.35	94.37	9.52	140.81	14.27	209.54	17.48	254.74	24.61	354.62
26	660.4	--	--	--	--	7.92	127.58	12.70	202.65	--	--	--	--	--	--
28	711.2	--	--	--	--	7.92	137.52	12.70	218.54	15.88	271.94	--	--	--	--
30	762.0	--	--	--	--	7.92	147.45	12.70	234.44	15.88	219.81	--	--	--	--
32	812.8	--	--	--	--	7.92	157.39	12.70	250.33	15.88	311.67	17.48	342.17	--	--
34	863.6	--	--	--	--	7.92	157.32	12.70	266.22	15.88	331.54	17.48	364.01	--	--
36	914.4	--	--	--	--	7.92	177.26	12.70	282.12	15.88	351.41	19.05	420.21	--	--

B 36-10

and Weights

Schedule

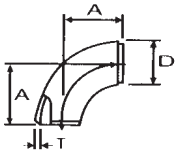
80		100		120		160		Standard		Extra-Strong		Double Extra Strong		D. Tubi Size P.
mm	kg / m	mm	kg / m	mm	kg / m	mm	kg / m	mm	kg / m	mm	kg / m	mm	kg / m	nominal in inch
2.41	0.46	--	--	--	--	--	--	1.73	0.36	2.41	0.46	--	--	1/8”
3.02	0.80	--	--	--	--	--	--	2.24	0.63	3.02	0.80	--	--	1/4”
3.20	1.10	--	--	--	--	--	--	2.31	0.85	3.20	1.10	--	--	3/8
3.73	1.62	--	--	--	--	4.78	1.95	2.77	1.26	3.73	1.62	7.47	2.54	1/2
3.91	2.19	--	--	--	--	5.56	2.89	2.87	1.68	3.91	2.19	7.82	3.63	3/4
4.55	3.23	--	--	--	--	6.35	4.23	3.38	2.50	4.55	3.23	9.09	5.45	1
4.85	4.46	--	--	--	--	6.35	5.60	3.56	3.38	4.48	4.46	9.70	7.75	1 1/4
5.08	5.40	--	--	--	--	7.14	7.23	3.68	4.05	5.08	5.40	10.16	9.54	1 1/2
5.54	7.47	--	--	--	--	8.74	11.10	3.91	5.43	5.54	7.47	11.07	13.44	2
7.01	11.40	--	--	--	--	9.52	14.90	5.16	8.62	7.01	11.40	14.02	20.39	2 1/2
7.62	15.25	--	--	--	--	11.13	21.30	5.49	11.28	7.62	15.25	15.24	27.65	3
8.08	18.62	--	--	--	--	--	--	5.74	13.56	8.08	18.82	--	--	3 1/2
8.56	22.29	--	--	11.13	28.25	13.49	33.51	6.02	16.06	8.56	22.29	17.12	40.99	4
9.52	30.92	--	--	12.70	40.24	15.88	49.05	6.55	21.76	9.52	30.92	19.05	57.37	5
10.97	42.52	--	--	14.27	54.20	18.26	67.47	7.11	28.23	10.97	42.52	21.95	79.11	6
12.70	64.57	15.09	75.79	18.26	90.32	23.01	111.18	8.18	42.49	12.70	64.57	22.22	107.78	8
15.09	95.84	18.26	114.59	21.44	132.85	28.58	172.11	9.27	60.24	12.70	81.46	25.40	154.97	10
17.48	131.81	21.44	159.67	25.40	186.75	33.32	238.60	9.52	73.76	12.70	97.86	25.40	186.75	12
19.05	157.94	23.83	194.64	27.79	224.36	35.71	281.49	9.52	81.21	12.70	107.28	--	--	14
21.44	203.26	26.19	245.34	30.96	286.33	40.49	364.94	9.52	93.13	12.70	123.18	--	--	16
23.83	254.24	29.36	309.55	34.92	363.33	39.67	459.18	9.52	105.05	12.70	139.07	--	--	18
26.19	310.91	32.54	381.20	38.10	441.06	44.45	564.24	9.52	116.97	12.70	154.97	--	--	20
28.58	373.27	34.92	450.75	41.28	526.24	47.62	671.28	9.52	128.89	12.70	170.86	--	--	22
30.96	441.30	38.89	546.84	46.02	639.18	52.37	806.74	9.52	140.81	12.70	202.75	--	--	24
--	--	--	--	--	--	--	--	9.52	152.73	12.70	202.65	--	--	26
--	--	--	--	--	--	--	--	9.52	152.73	12.70	218.54	--	--	28
--	--	--	--	--	--	--	--	9.52	164.65	12.70	234.44	--	--	30
--	--	--	--	--	--	--	--	9.52	176.57	12.70	234.44	--	--	32
--	--	--	--	--	--	--	--	9.52	188.50	12.70	250.83	--	--	34
--	--	--	--	--	--	--	--	9.52	212.34	12.70	282.12	--	--	36

N. B. :- Thickness and weight “standard” “Extra-Strong” and “Double Extra Strong” within swell elges have a correspondent value in a “Schedule”

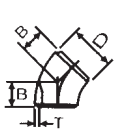
For Different thickness that suitable the weights can proceeds by following formula $\frac{24.66(D-t)\,t}{1000}$

* In accordance to ANSI B 36.19

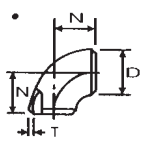
BUTT WELDING PIPE FITTING DIMENSIONAL STANDARD ANSI B 16.28



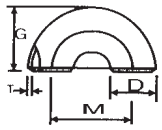
90° Elbol long radius



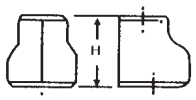
45° Elbow



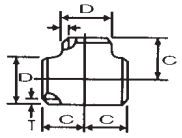
90° Elbow short radius



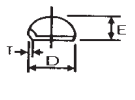
180° Return long radius



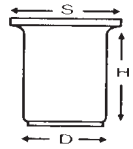
Reducer



Tee equal tee

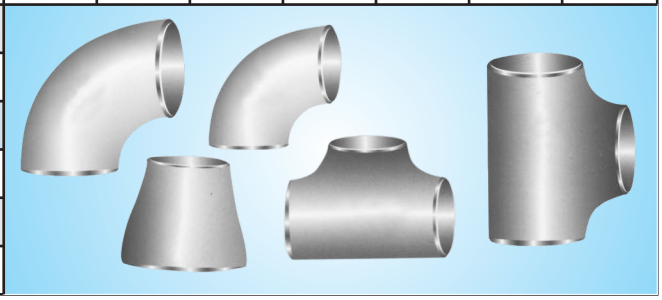


Caps



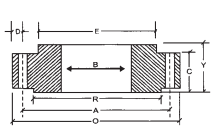
Stubends

Nominal Pipe Size		Outside Diameter	Centre to Face				Back to Face			Centre to Centre			Length "L" MSSSP43 B16.9	
Inch	mm	D	A	B	C	N	E	F	G	R	M	S	L	L
1/2	15	21.3	19.00	16.0	25.0	-	25.0	48.0	-	76.0	-	35.0	50.8	76.2
3/4	20	26.7	29.00	11.0	29.0	-	25.0	43.0	-	57.0	-	43.0	50.8	76.2
1	25	33.4	38.00	22.0	38.0	25.0	38.0	56.0	41.0	76.0	51.0	51.0	50.8	101.6
1 1/4	32	42.2	48.00	25.0	48.0	32.0	38.0	70.0	52.0	95.0	64.0	64.0	50.8	101.6
1 1/2	40	48.3	57.15	29.0	57.0	38.0	38.0	83.0	62.0	114.0	67.0	73.0	50.8	101.6
2	50	60.3	76.00	35.0	64.0	51.0	38.0	106.0	81.0	152.0	102.0	93.0	63.5	152.4
2 1/2	65	73.0	95.25	44.0	76.0	64.0	38.0	132.0	100.0	191.0	127.0	105.0	63.5	152.4
3	80	88.9	114.30	51.0	86.0	76.0	51.0	159.0	121.0	229.0	152.0	127.0	63.5	152.4
3 1/2	90	101.6	133.35	57.0	95.0	89.0	64.0	184.0	140.0	267.0	178.0	140.0	76.2	152.4
4	100	114.3	152.0	63.0	105.0	102.0	64.0	210.0	159.0	305.0	203.0	157.0	76.2	152.4
5	125	141.3	190.0	79.0	123.0	127.0	76.0	262.0	197.0	381.0	254.0	186.0	76.2	203.2
6	150	168.3	229.0	95.0	143.0	152.0	89.0	313.0	237.0	457.0	305.0	216.0	88.9	203.2
8	200	219.1	305.0	127.0	178.0	203.0	102.0	414.0	313.0	610.0	406.0	270.0	101.6	203.2
10	250	273.1	381.0	159.0	216.0	254.0	127.0	515.0	391.0	762.0	508.0	324.0	127.0	254
12	300	323.9	457.0	190.0	254.0	303.0	152.0	619.0	467.0	914.0	610.0	381.0	152.4	254
14	350	355.6	533.0	222.0	279.0	356.0	165.0	711.0	533.0	1067.0	711.0	413.0	152.4	305.0
16	400	406.4	610.0	254.0	305.0	406.0	178.0	813.0	610.0	1219.0	813.0	470.0	152.4	305.0
18	450	457.2	686.0	286.0	343.0	457.0	203.0	914.0	686.0	1372.0	914.0	533.0	152.4	305.0
20	500	508.0	762.0	318.0	381.0	508.0	229.0	1016.0	762.0	1524.0	1016.0	584.0	152.4	305.0
22	550	559.	838.0	343.0	419.0	559.0	254.0	1118.0	838.0	1676.0	1118.0	614.40	152.4	305.0
24	600	610.0	914	381.0	432.0	610.0	267.0	1219.0	914.0	1829.0	1219.0	692.0	152.4	305.0
26	650	660.0	991.0	406.0	495.0	660.0	267.0							
28	700	711.0	1067.0	438.0	521.0	771.0	267.0							
30	750	762.0	1143.0	470.0	559.0	762.0	267.0							
32	800	813.0	1219.0	502.0	597.0	813.0	267.0							
34	850	864.0	1295.0	533.0	635.0	864.0	267.0							
36	900	914.0	1372.0	565.0	673.0	914.0	267.0							

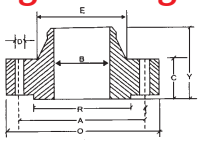


E-Mail: jaypeemetal@yahoo.com / jpferrometal@gmail.com / info@jaypeeferrometal.com

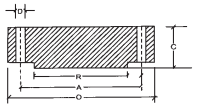
Dimensions of Forged Flanges ANSI B 16.5



SLIP-ON FLANGE



WELDING NECK FLANGE



BLIND FLANGE

Dimensions of Class 150 Flanges as per ANSI B 16.5

Nominal Pipe Size		Flange Dia	Dia of Bolt Circle	Dia of Bolt Holes	No. of Holes	Thk of Flange	Dia of Hub	Length through Hub			Dia of Bore		Dia of R/F	Depth of Socket	Pipe Dia
								S/O & S/W	W/N	L/J	S/O & S/W	L/J			
(MM)	(INCH.)	O	A	D		C	E	Y	Y	Y	B	B	R	F	X
15	1/2	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	3/4	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	1	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	1 1/4	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	1 1/2	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	2	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	2 1/2	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	3	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	4	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	5	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	6	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	8	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	10	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	12	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	14	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	16	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	18	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	20	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	24	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

All Dimensions are in Millimeters • Flanges except Lap Joint wil be furnished with (1.6mm) Raised Face, which is included in Thickness (C) and Length through Hub(Y).

Dimensions of Class 300 Flanges as per ANSI B 16.5

Nominal Pipe Size		Flange Dia	Dia of Bolt Circle	Dia of Bolt Holes	No. of Holes	Thk of Flange	Dia of Hub	Length through Hub			Dia of Bore		Dia of R/F	Depth of Socket	Pipe Dia
								S/O & S/W	W/N	L/J	S/O & S/W	L/J			
(MM)	(INCH.)	O	A	D		C	E	Y	Y	Y	B	B	R	F	X
15	1/2	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	3/4	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	1	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	1 1/4	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	1 1/2	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	2	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	2 1/2	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	3	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	4	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	5	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	6	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	8	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	10	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	12	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	14	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	16	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	18	711.2	628.5	34.9	24	60.3	533.4	88.9	158.7	130.2	461.8	482.3	533.4	-	457.20
500	20	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	24	914.4	812.8	41.3	24	69.8	701.7	106.4	188.3	152.4	615.9	615.9	692.1	-	609.60

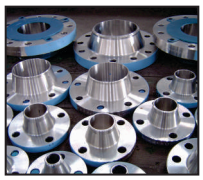
All Dimensions are in Millimeters • Flanges except Lap Joint wil be furnished with (1.6mm) Raised Face, which is included in Thickness (C) and Length through Hub(Y).

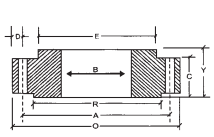
Dimensions of Class 600 Flanges as per ANSI B 16.5

Nominal Pipe Size	Flange Dia	Dia of Bolt Circle	Dia of Bolt Holes	No. of Holes	Thk of Flange	Dia of Hub	Length through Hub			Dia of Bore		Dia of R/R	Depth of Socket	Pipe Dia
							S/O & S/W	W/N	L/J	S/O & S/W	L/J			
(MM)	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	22.3	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	144.5	185.7	-	141.30
150	355.6	292.1	28.6	12	47.6	222.2	66.7	117.5	66.4	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	277.4	323.8	-	273.05
300	558.8	488.9	34.9	20	66.7	400.0	92.1	155.6	117.3	327.1	328.2	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	462.3	533.4	-	457.20
500	812.8	723.9	44.4	24	88.9	609.9	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

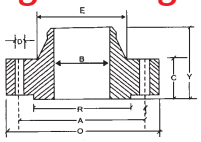
All Dimensions are in Millimeters • Flanges except Lap Joint wil be furnished with (6.35mm) Raised Face, which is not included in Thickness (C) and Length through Hub(Y).

Dimensions of Forged Flanges ANSI B 16.5

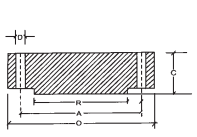




SLIP-ON FLANGE



WELDING NECK FLANGE



BLIND FLANGE

Dimensions of Class 900 Flanges as per ANSI B 16.5

Nominal Pipe Size (MM)	Flange Dia O	Dia of Bolt Circle A	Dia of Bolt Holes D	No. of Holes	Thk of Flange C	Dia of Hub E	Length through Hub S/O & S/W Y	Length through Hub W/N Y	Length through Hub L/J Y	Dia of Bore S/O & S/W B	Dia of Bore L/J B	Dia of R/R R	Depth of Socket F	Pipe Dia 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	157.2	-	114.30
125	349.2	279.4	35.0	8	50.8	190.5	79.3	127.0	79.2	143.7	144.5	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	269.9	-	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

All Dimensions are in Millimeters • Flanges except Lap Joint wil be furnished with (6.35mm) Raised Face, which is not included in Thickness (C) and Length through Hub(Y).

Dimensions of Class 1500 Flanges as per ANSI B 16.5

Nominal Pipe Size (MM)	Nominal Pipe Size (INCH.)	Flange Dia O	Dia of Bolt Circle A	Dia of Bolt Holes D	No. of Holes	Thk of Flange C	Dia of Hub E	Length through Hub S/O & S/W Y	Length through Hub W/N Y	Length through Hub L/J Y	Dia of Bore S/O & S/W B	Dia of Bore L/J B	Dia of R/F R	Depth of Socket F	Pipe Dia X
15	1/2	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	3/4	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	1	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	1 1/4	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	1 1/2	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	2	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	2 1/2	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	3	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	4	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	5	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	6	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	8	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	10	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	12	673.1	571.5	54.0	16	123.8	450.8	181.0	282.5	218.9	327.1	328.1	381.0	-	323.85

All Dimensions are in Millimeters • Flanges except Lap Joint wil be furnished with (6.35mm) Raised Face, which is not included in Thickness (C) and Length through Hub(Y).

Dimensions of Class 2500 Flanges as per ANSI B 16.5

Nominal Pipe Size (MM)	Nominal Pipe Size (INCH.)	Flange Dia O	Dia of Bolt Circle A	Dia of Bolt Holes D	No. of Holes	Thk of Flange C	Dia of Hub E	Length through Hub S/O & S/W Y	Length through Hub W/N Y	Length through Hub L/J Y	Dia of Bore S/O & S/W B	Dia of Bore L/J B	Dia of R/F R	Depth of Socket F	Pipe Dia X
15	1/2	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	3/4	139.7	95.3	22.2	4	31.7	50.8	42.9	79.4	42.9	27.7	27.7	42.9	-	26.67
25	1	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	1 1/4	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	1 1/2	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	2	234.9	171.4	28.6	8	50.8	95.2	69.8	127.0	69.8	62.4	62.0	92.1	-	60.31
65	2 1/2	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	3	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	4	355.6	273.0	41.2	8	76.2	165.1	107.9	190.5	107.9	116.1	116.1	157.2	-	114.30
125	5	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	6	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	8	552.4	438.1	54.0	12	127.0	304.8	177.8	317.5	177.8	221.5	221.5	269.9	-	129.07
250	10	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	12	762.0	619.1	73.0	12	184.1							381.0	-	323.85

All Dimensions are in Millimeters • Flanges except Lap Joint wil be furnished with (6.35mm) Raised Face, which is not included in Thickness (C) and Length through Hub(Y).

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WELDING NECK FLANGE BORES (B)

Nominal Pipe Size	Outside Dia	Sch. 20	Sch. 30	Std. Wall	Sch. 40	Extra Strong	Sch. 80	Sch. 120	Sch. 160	Double Extra Strong
15	21.33	-	-	15.7	15.7	13.8	13.3	-	11.7	6.4
20	26.67	-	-	20.8	20.8	18.8	18.8	-	15.5	11.0
25	33.40	-	-	26.6	25.4	24.3	24.3	-	20.7	15.2
32	42.16	-	-	35.0	35.0	32.4	32.4	-	29.4	22.7
40	48.26	-	-	40.8	40.8	38.1	38.1	-	33.7	27.9
50	60.31	-	-	52.3	52.3	49.2	49.2	-	42.8	38.1
65	73.02	-	-	62.4	62.4	59.0	59.0	-	53.9	44.9
80	88.90	-	-	77.9	77.9	73.6	73.6	-	66.6	58.4
100	114.30	-	-	102.2	102.2	97.1	97.1	92.0	87.3	80.0
125	141.30	-	-	128.1	128.1	122.2	122.2	115.9	109.5	103.2
150	168.27	-	-	154.0	154.0	146.3	146.3	139.7	131.7	124.3
200	219.07	206.2	204.9	202.7	202.7	193.6	193.6	182.5	173.0	174.6
250	273.05	260.3	257.4	252.5	254.5	247.6	242.8	230.1	251.9	222.2
300	323.85	311.1	307.0	304.8	303.2	298.4	288.8	273.0	257.2	273.0
350	355.60	337.8	336.5	336.5	333.3	330.2	371.5	300.0	284.1	-
400	406.40	390.3	387.3	387.3	381.0	381.0	363.5	344.5	325.4	-
450	457.20	441.1	434.9	438.1	428.6	431.8	409.5	387.3	366.7	-
500	508.00	488.9	482.6	488.9	477.8	482.6	455.6	431.8	407.9	-
600	609.60	590.5	581.0	590.5	574.6	584.2	547.6	517.5	490.5	-

All dimensions are in Millimeters

DIMENSION OF FLANGES AS PER TABLE BS-10

TABLE - D

For Working Steam Pressure upto 50 lbs per sq. inch

Nominal Pipe Size	O.D. of Pipe	O.D.	P.C.D.	No. of Bolt	Dia of Bolt	Thickness
½"	21.3	95.3	66.7	4	12.7	4.8
¾"	26.7	101.6	73.0	4	12.7	4.8
1"	33.4	114.3	82.6	4	12.7	4.8
1¼"	42.2	120.7	87.3	4	12.7	6.4
1½"	48.3	133.4	98.4	4	12.7	6.4
2"	60.3	152.4	114.3	4	15.9	7.9
2½"	73.0	165.1	127.0	4	15.9	7.9
3"	88.9	184.2	146.1	4	15.9	9.5
3½"	101.6	203.2	165.1	4	15.9	9.5
4"	114.3	215.9	177.8	4	15.9	9.5
5"	141.3	254.0	209.6	8	15.9	12.7
6"	168.3	279.4	228.6	8	15.9	12.7
7"	190.5	304.8	260.4	8	15.9	12.7
8"	219.1	336.6	292.1	8	15.9	12.7
9"	244.5	368.3	323.9	8	15.9	15.9
10"	273.0	406.4	355.6	8	19.1	15.9
12"	323.9	457.2	406.4	12	19.1	15.9
14"	355.6	527.1	469.9	12	22.2	19.1
16"	406.4	577.9	520.7	12	22.2	19.1
18"	457.2	641.4	584.2	12	22.2	22.2
20"	508.0	704.9	641.4	16	22.5	25.4
24"	609.6	825.5	755.7	16	25.4	28.6

TABLE - E

For Working Steam Pressure from 50 lbs to 100 lbs per sq. inch

Nominal Pipe Size	O.D. of Pipe	O.D.	P.C.D.	No. of Bolt	Dia of Bolt	Thickness
½"	21.3	95.3	66.3	4	12.7	6.4
¾"	26.7	101.6	73.0	4	12.7	6.4
1"	33.4	114.3	82.6	4	12.7	7.1
1¼"	42.2	120.7	87.3	4	12.7	7.9
1½"	48.3	133.4	98.4	4	12.7	8.7
2"	60.3	152.4	114.3	4	15.9	9.5
2½"	73.0	165.1	127.0	4	15.9	10.3
3"	88.9	184.2	146.1	4	15.9	11.1
3½"	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	228.6	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	257.2	406.4	12	22.2	25.4
14"	355.6	527.2	469.9	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	647.4	16	22.2	31.8
24"	609.6	825.5	755.7	16	25.4	38.1

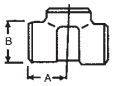
TABLE - F For Working Steam Pressure From 100 lbs to 150 lbs per sq. inch

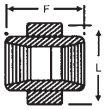
Nominal Pipe Size	O.D. of Pipe	O.D.	P.C.D.	No. of Bolt	Dia of Bolt	Thickness
½"	21.3	95.3	66.7	4	12.7	9.5
¾"	26.7	101.6	73.0	4	12.7	9.5
1"	33.4	120.7	87.3	4	15.9	9.5
1¼"	42.2	133.4	98.4	4	15.9	12.7
1½"	48.3	139.7	104.8	4	15.9	12.7
2"	60.3	165.1	127.0	4	15.9	15.9
2½"	73.0	184.2	146.1	8	15.9	15.9
3"	88.9	203.2	165.1	8	15.9	15.9
3½"	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	25.4
9"	244.5	406.4	355.6	12	22.2	25.4
10"	273.0	431.8	381.0	12	22.2	25.4
12"	323.9	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

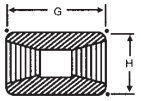
TABLE - H For Working Steam Pressure From 150 lbs to 250 lbs per sq. inch

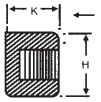
Nominal Pipe Size	O.D. of Pipe	O.D.	P.C.D.	No. of Bolt	Dia of Bolt	Thickness
½"	21.3	114.3	82.6	4	15.9	12.7
¾"	26.7	114.3	82.6	4	15.9	12.7
1"	33.4	120.7	87.3	4	15.9	14.3
1¼"	42.2	133.4	98.4	4	15.9	17.5
1½"	48.3	139.7	104.8	4	15.9	17.5
2"	60.3	165.1	127.0	4	15.9	19.1
2½"	73.0	184.2	146.1	8	15.9	19.1
3"	88.9	203.2	165.1	8	15.9	22.2
3½"	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	302.8	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

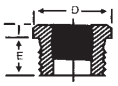
Note : For 12.7 mm and 15.87 mm Bolts Dia the diameters of the holes will be 1.58 mm larger and for 19.01 and above the Hole Dia will be 3.17 larger

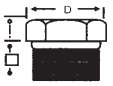












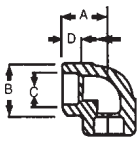
PLUG

HALF COUPLING = G/2

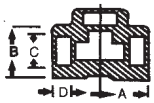
DIMENSION IN MM OF FORGED SCREWED FITTINGS TO ANSI B-16.11 THREADED TO ASA B 2.1

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	K
1/8”	10.3	21	22	17	32	16	19	11	10	40	-	6	-	25	25	19	32	22	-
1/4”	13.7	25	25	19	35	19	25	16	11	43	4	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	28	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

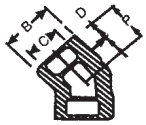
90⁰ ELBOWS



TEE



45⁰ ELBOW



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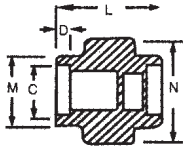
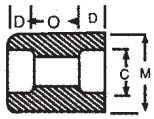
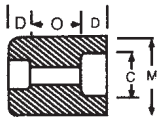


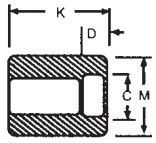
COUPLING



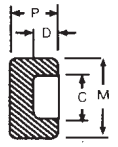
REDUCER



HALF COUPLING



CAP



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	N
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 OTHER SPECIFICATIONS AS PER CUSTOMERS REQUIREMENTS ARE AVAILABLE ON REQUEST

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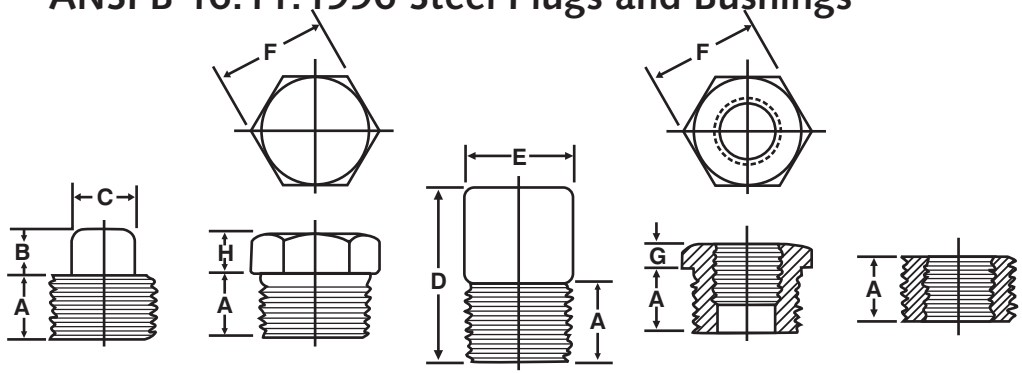
HIGH PRESSURE FITTINGS

ANSI B 16.11:1996 Steel Plugs and Bushings



SQUARE HEAD PLUG | HEX HEAD PLUG | ROUND HEAD PLUG | HEX HEAD BUSHING | FLUSH BUSHING

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

HEXAGON NIPPLE & REDUCING NIPPLE

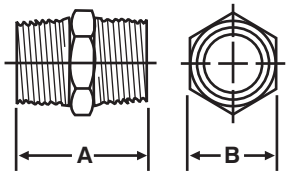


Fig. 5 & 6

HEXAGON REDUCING BUSH

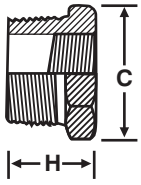


Fig. 7

BACKNUT

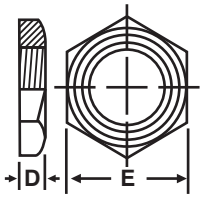


Fig. 8

SQUARE HEAD PLUG

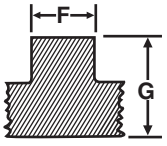


Fig. 9

	Nominal Bore											
	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4
A	1.37	1.5	1.68	2.12	2.31	2.62	2.80	2.87	3,06	3.12	3.5	4.1
B	0.525	0.600	0.820	0.920	1.10	1.39	1.86	2.05	2.50	3.125	3.625	5.51
C	0.525	0.600	0.820	0.920	1.10	1.39	1.86	2.05	2.50	3.125	3.625	5.51
D	0.25	0.25	0.28	0.31	0.37	0.37	0.37	0.44	0.50	0.62	0.75	0.89
E	0.600	0.820	0.920	1.10	01.48	1.67	2.25	2.375	2.750	3.35	4.45	5.50
F	0.250	0.34	0.44	0.50	0.56	0.75	0.87	1.05	1.25	1.44	1.50	2.00
G	0.56	0.75	0.75	0.93	1.00	1.25	1.37	1.37	1.68	1.87	2.06	2.43
H	0.68	0.68	0.68	0.87	0.93	1.18	1.37	1.43	1.62	1.81	2.06	2.50

1) Available on demand
2) An dimensions are are in inches.

CHEMICAL & PHYSICAL PROPERTIES OF C.S., S.S. & A.S., S.W. FORGED FITTINGS

ASTM A 105/A 105M Forged Socket Weld, Screwed, Flanges, Carbon Steel Pipe Fittings

IASTM GRADE	C	MnSi	Si	S	P	Cr	Ni	Mo	Other Psi (Mpa)	Tensile (MPa)	Psi Yield %	Elangation in Area	Hardness	Redu
A 105/105 M	0.35 max	0.60 1.05	0.35 max	0.50 max	0.04 max	-	-	-	-	70000 485	36000 (250)	30-Strip 22-Round	187 HB max	30 Round
A 182C1160&170 30000(20.29)	0.08 max	1.10 max	0.32 max	0.35min 0.50max	0.05 max	- -	- -	- -	- -	Cl.70-70000(49-46) Cl.60-60000(42.32)	30000 (200)	22	-	35

ASTM A 182/A 182M Austentic, Stainless Steel Forged (SW), Screwed, Flanges, For High Temps, Service

IA 182/182M F 304	0.08 max	2.00 max	1.00 max	0.03 max	0.04 max	18.0 20.0	8.0 11.0	-	-	75000 (515)	30000 (205)	30		50
A 182/182 M F 304L	0.035 max	2.00 max	1.00 max	0.03 max	0.04 max	18.0 20.0	18.0 13.0	-	-	70000 (485)	25000 (170)	30	223	50
A 182/182M F 316	0.08 max	2.00 max	1.00 max	0.03 max	0.04 max	16.0 18.0	10.0 14.0	2.0 3.0	-	75000 (515)	30000 (205)	30(Long) 25(Trans)	-	50 (Long) 45 (Trans)
A 182/182M F316L	0.035 max	2.00 max	1.00 max	0.03 max	0.04 max	16.0 18.0	10.0 15.0	2.0 3.0	-	70000 (485)	25000 (170)	30	-	50
A182/182M F 316 H	0.04 0.10	2.00 max	1.00 max	0.03 max	0.04 max	16.0 18.0	10.0 14.0	2.0 3.0	-	75000 (515)	30000 (205)	30	-	50
A182/182M F321	0.08 max	2.00 max	1.00 max	0.03 max	0.04 max	17.0 mm.	9.0 12.0	-	Tixc= 0.70max	75000 (515)	30000 (205)	30	-	50
A182/182M F310	0.15 max	2.00 max	1.00 max	0.03 max	0.04 max	24.0 26.0	19.0 22.0	-	-	75000 (515)	30000 (205)	30	-	50
A182/182M F317L	0.030 max	2.00 max	1.00 max	0.03 max	0.045 max	18.0 20.0	11.0 15.0	3.00 4.00	-	70000 (485)	25000 (170)	30	-	50 50
A182/182M F347H	0.04 0.10	2.00 max	1.00 max	0.03 max	0.04 max	17.0 20.0	9.0 13.0		Cb+Ta= 8.0=1.10	75000 (515)	30000 (205)	30	-	50

ASTM A182M Forged Alloy Steel, (SW), Screwed, Flanges, for High Temperature Service

IA 182/182M F1	0.28 max	0.60 0.90	0.15 0.35	0.045 max	0.045 max		-	0.44 0.65	-	70000 (485)	40000 (275)	20	143-192 Bremell Hrdn.	30
IA 182/182M F12 Class2	0.10 0.20	0.30 0.80	0.10 0.60	0.04 max	0.04 max	0.80 1.25	-	0.44 0.65	-	70000 (485)	40000 (275)	20	143-207	30
IA 182 / 182M F11 Class2	0.10 0.20	0.30 0.80	0.50 1.0	0.04 max	0.04 max	1.0 1.50	-	0.44 0.65	-	70000 (485)	40000 (275)	20	143-207	30
IA 182/1821M F22 Class3	0.05 0.15	0.30 0.60	0.5 max	0.04 max	0.04 max	2.0 2.50	- -	0.87 1.13	- -	75000 (515)	45000 (310)	20	156-207	30
IA 182/182M F5	0.15 max	0.30 0.60	0.50 max	0.03 max	0.03 max	4.0 6.0	0.5 max	0.44 0.65		70000 (485)	40000 (275)	20	143-217	35
IA 182/182M F9	0.15 max	0.30 0.60	0.5 max	0.03 max	0.03 max	8.0 10.0	-	0.90 1.10	-	85000 (585)	55000 (386)	20	179-217	40

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NICKEL AND NICKEL ALLOYS COMPARATIVE CHART

ALLOY	UNS Nr	WS.Nr	C	Cr	Ni	Cu	Mo	Co	Fe	Mn	Al	Ti	Others %
NICKEL 200	N02200	2.4066	0.15 max	-	99.0 min	0.25 max	-	-	0.4 max	0.35 max	-	-	Si<0.35 S<0.01
NICKEL 201	N02201	2.4068	0.02 max	-	99.0 min	0.25 max	-	-	0.4 max	0.35 max	-	-	Si<0.35 S<0.02
NICKEL 205	N02205	2.4061	0.15 max	-	99.0 max	0.15 max	-	-	0.2 max	0.35 max	-	0.01-0.05	Mg<0.08 Si<0, S<0.008
NICKEL 211	-	2.4116	0.06	-	95	0.03	-	-	0.1	5	-	-	Si0.1
NICKEL 212	-	2.4110	0.1 max	-	97.0 min	0.2 max	-	-	0.25 max	1.5-2.5	-	-	Mg<0.2 Si<0.2
NICKEL 222	-	2.4053	-	-	99.0 min	0.1 max	-	-	0.1 max	0.3 max	-	0.005 max	Mg<0.1 Si<0.1, S<0.008
NICKEL 270	N02270	-	0.02 max	-	99.9 min	0.01 max	-	-	0.05 max	0.003 max	-	0.005 max	Mg<0.005 Si<0.005, S<0.003
MONEL 400	N04400	2.4360	0.3 max	-	63.5 min	28-34.0	-	-	2.5 max	2.0 max	-	-	Si<0.5 S<0.024
MONEL 401	N04401	-	0.1 max	-	40.0-45	bal	-	-	0.75 max	2.25 max	-	-	Si<0.25 S<0.015
MONEL R-405	N04405	-	0.3 max	-	63.0 min	28.0-34	-	-	2.5 max	2.0 max	-	-	Si<0.5 S0.025-0.06
MONEL K500	N05500	2.4375	0.25 max	-	63.5 max	27-33.0	-	-	2.0 max	1.5 max	2.3-3.2	0.85	Si<0.5 S<0,.01
INCONEL 600	N06600	2.4816	0.15 max	14-17.0	72.0 min	0.5 max	-	-	6-10.0	1.0 max	-	-	Si<0.5 S<0.015
ALLOY 600L	N06600	2.4817	0.025 max	14-17.0	72.0 min	-	-	-	6-10.0	-	-	0.3 max	-
INCONEL 601	N06601	2.4851	0.1 max	21-25.0	58-63.0	1.0 max	-	-	bal	1.0 max	1.0-1.7	-	Si<0.5 S<0.015
INCONEL 617	N06617	2.4663	0.05-0.15	20-24.0	44.5 min	0.5 max	8-10.0	10-15.0	3.0 max	1.0 max	0.8-1.5	0.6 max	Si<0.1 S<0.015 B<0.006
INCONEL 625	N06625	2.4856	0.1 max	20.-23.0	58.0 min	-	8-10.0	1.0 max	5.0 max	0.5 max	0.4 max	0.4 max	Si<0.5 S<0.015 P<0.015 Nb4.0
INCONEL 625LCF	N06626	-	-	21.5	61	-	9	-	2.5	-	-	-	Nb3.6
INCONEL 686	N06636	2.4606	0.01 max	19-23.0	bal	-	15-17.0	-	5.0 max	0.75 max	-	0.02-0.25	W 3-4.4 Si<0.08 S<0.02 P<0.04
INCONEL MA754	N07754	-	0.05	20	78	-	-	-	1	-	0.3	0.5	Y203 0.6
INCONEL MA758	-	-	-	30	67	-	-	-	1	-	0.3	0.5	Y203 0.6
INCONEL 783	R30783	-	-	3	28.5	-	-	34	26	-	5.4	0.1	Nb3.0
INCONEL MA6000	-	-	-	15	68.5	-	2	-	-	-	4.5	2.5	W4.0 Ta 2.0 Y203 = 1.1
INCONEL G3	N06985	2.4619	0.015 max	21-23.5	36.0 min	1.5-2.5	6-8.0	5.0 max	18-21.0	1.0 max	-	-	W<1.5 Si<1.0 Nb<0.5 P<0.04 S<0.03
INCOLOY 800	N08800	1.4876	0.1 max	19-23.0	30-35.0	0.75 max	-	-	39.5 min	1.5 max	0.15-0.60	0.15-0.60	Si<0.1 S<0.015
INCOLOY 800H	N08810	1.4876	0.08	21	32.5	-	-	-	46	-	-	-	Al+Ti0.85-1.2
INCOLOY 800HT	N08811	-	0.06-0.1	19-23.0	30-35.0	0.75 min	-	-	39.5 min	1.5 max	0.15-0.60	0.15-0.60	Al+Ti0.85-1.2 Si<1.0 S<0.015
INCOLOY 028	N08028	1.4563	0.015 max	26-28.0	30-32.0	1-1.4	3-4.0	-	bal	-	-	-	N 0.04 - 0.07
ALLOY 31	N08031	1.4562	0.015 max	26-28.0	30-32.0	1-1.4	6-7.0	-	bal	-	-	-	N 0.15 - 0.25
INCOLOY 801	N08801	-	-	21	32	-	-	-	45	-	-	1	
INCOLOY 802	N08802	-	0.4	21	32.5	-	-	-	46	-	-	-	
INCOLOY 803	S35045	-	0.06-0.10	25-29	32-37	0.75 max	-	-	bal	1.5 max	0.15-0.6	0.15-0.6	Si<1.0 S<0.015
INCOLOY 825	N08825	2.4858	0.05 max	19.5-23.5	38-46.0	1.5-3.0	2.5-3.5	-	22.0 min	1.0 max	0.2 max	0.6-1.2	Si<0.5 S<0.03
INCOLOY 840	-	1.4847	-	20	20	-	-	-	60	-	-	-	
INCOLOY 864	S35135	-	0.03	21	34	-	4.2	-	bal	-	-	0.6	Si 0.8
NI-SPAN C-902	N09902	-	0.06max	4.9-5.75	41-43.5	-	-	-	bal	0.8 max	0.3-0.8	2.2-2.75	Si<1.0 S<0.04 P<0.04
INCOLOY 903	N19903	-	-	-	38	-	-	15	42	-	0.7	1.4	Nb 3.0
INCOLOY 907	N19907	2.4693	-	-	38	-	-	13	42	-	0.03	1.5	Nb 4.7 Si 0.15
INCOLOY 909	N19909	2.4692	-	19.5-22.5	38	-	-	13	42	-	0.03	1.5	Nb 4.7 Si 0.4
INCOLOY 925	N09925	-	0.03 max	17-19.0	42-46.0	1.5-3.0	2.5-3.5	-	22.0 min	1.0 max	0.1-0.5	1.9-2.4	Si < 0.5 Nb <0.5 P<0.03 S<0.03
INCOLOY DS	-	1.4862	0.1 max	19-21	34.5-41.0	0.5 max	-	-	bal	0.8-1.5	-	0.2 max	Si 1.9 - 2.6 S<0.03
INCOLOY 020	N08020	2.4660	0.02 max	20	35-48	3.0-4.0	2.0-3.0	-	37	-	-	-	Nb 0.6
INCOLOY 25-6MO	N08926	1.4529	-	15	25	1.2	6.5	-	47	-	-	-	N 0.5
INCOLOY A-286	S66286	1.4980	-		25.5	-	1.25	-	56.5	-	-	2.1	-

MILD STEEL PIPES CONFIRMING TO IS : 1239 (Part 1) - 1979

Nominal Bore		Outside Diameter		Light		Medium		Heady	
				Thickness	Weight	Thickness	Weight	Thickness	Weight
Inch	In mm	In	mm	mm	kg/mtr	mm	kg/mtr	mm	kg/mtr
1/8"	3 mm	0.406	10.32	1.80	0.361	2.00	0.407	2.65	0.493
1/4"	6 mm	0.532	13.49	1.80	0.517	2.35	0.650	2.90	0.769
3/8"	10 mm	0.872	17.10	1.80	0.674	2.35	0.852	2.90	1.02
1/2"	15 mm	0.844	21.43	2.00	0.952	2.65	1.122	3.25	1.45
3/4"	20 mm	1.094	27.20	2.35	1.410	2.65	1.580	3.25	1.90
1"	25 mm	1.312	33.80	2.65	2.010	3.25	2.440	4.05	2.97
1.1/4"	32 mm	1.656	42.90	2.65	2.580	3.25	3.140	4.05	3.84
1.1/2"	40 mm	1.906	48.40	2.90	3.250	3.25	3.610	4.05	4.43
2"	50 mm	2.375	60.30	2.90	4.110	3.65	5.100	4.47	6.17
2.1/2"	65 mm	3.004	76.20	2.25	5.840	3.65	6.610	4.47	7.90
3"	80 mm	3.500	88.90	3.25	6.810	4.05	8.470	4.85	10.1
4"	100 mm	4.500	114.30	3.65	9.890	4.50	12.10	5.40	14.4
5"	125 mm	5.500	139.70	-	-	4.85	16.20	5.40	17.8
6"	150 mm	6.500	165.10	-	-	4.85	19.20	5.40	21.2

BIG DIAMETER ERW PIPES CONFIRMING TO IS 3589

Wall Thickness in mm	Nominal Bore 7" NB 193.7 mm OD	Nominal Bore 8" NB 219.1 mm OD	Nominal Bore 10" NB 273 mm OD	Nominal Bore 12" NB 323.7 mm OD	Nominal Bore 14" NB 355.6 mm OD	Nominal Bore 16" NB 406.4 mm OD	Nominal Bore 18" NB 457 mm OD	Nominal Bore 20" NB 508 mm OD
kg/mtr	kg/mtr	kg/mtr	kg/mtr	kg/mtr	kg/mtr	kg/mtr	kg/mtr	kg/mtr
4.85	22.59	25.62	32.07	38.13	-	-	-	-
5.20	24.17	27.43	34.34	40.85	-	-	-	-
5.60	26.00	29.28	36.93	43.93	48.11	-	-	-
6.00	27.88	31.53	39.50	47.02	51.49	61.00	69.00	-
6.35	29.34	33.28	41.73	49.67	54.43	62.35	70.50	78.50
7.01	32.27	36.76	46.43	55.45	61.82	69.04	-	-
7.94	-	41.00	50.95	61.85	67.98	77.92	87.80	-
8.18	-	42.56	53.42	65.12	-	-	-	-
9.53	-	51.50	60.24	73.75	81.21	93.13	105.00	117.00
12.70	-	-	-	-	107.28	123.30	139.00	155.00

Tolerance on Thickness and Weight : as per IS 1239

The following manufacturing tolerance shall be permitted on the tubes and sockets.

(a) Thickness

(1) Butt welded Light tubes +Not limited -8 percent

Medium and Heavy tubes +Not Limited -8 percent

(2) Seamless +Not Limited -12.5 percent

(b) Weight :

(1) Single tube (light series) +10 percent - 8 percent

(2)Single tube (medium and heavy series) +10 pernt

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

Nominal Bore	Maximum Permissible Presure		Maximum Permissible Temperature
mm	N/mm^2	$Kg./cm^2$	°C
Upto and including 25 mm	1.20	12.24	260
Over 25 mm upto and Including 40 mm	1.03	10.50	260
Over 40 mm upto and including 80 mm	0.86	8.77	260
Over 80 mm upto and including 100 mm	0.69	7.04	260
	0.83	8.47	177
Over 100 mm upto and including 125 mm	0.69	7.04	171
Over 125 mm upto and includi 150 mm	0.50	5.10	160

For tubes fitted with appropriate fittings of suitably butt welded together, the Max. permissible press shall be 21.00 Kg/cm2 and Max. Permissible temp. 260°C

CARBON STEEL, ALLOY STEEL, LOWTEMP, PIPE AND TUBES SPECIFICATION

CHEMICAL ANALYSIS									MECHANICAL PROPERTIES			SPECIFIC REQUIREMENT
									TENSILE STRENGTH	YIELD STRENGTH	ELONG-ATION	
SPECIFICATION	WT	C%	Mn%	P% MAX	S% MAX	Si%	Cr%	Mo%	Mpa	Mpa	5mm MN longitudina	
ASTM A 53/A	AW	0.25 MAX	0.92 MAX	0.50	0.060	-	-	-	331 MIN	207 MIN	36	
ASTM A 53N	AW	0.30 MAX	1.20 MAX	0.50	0.060	-	-	-	413 MIN	240 MIN	29.5	
ASTM 106/A	AW	0.25 MAX	0.27-0.93	0.025	0.025	0.10 MIN	0.40 MAX	0.15 MAX	330 MIN	205 MIN	35/28	
ASTM A106/B	AW	0.30 MAX	0.29-1.06	0.025	0.025	0.10 MIN	0.40 MAX	0.15 MAX	415 MIN	240 MIN	30/22	
ASTM A 106/C	AW	0.35 MAX	0.29-1.06	0.025	0.025	0.10 MIN	0.40 MAX	0.15 MAX	485 MIN	275 MIN	30/22	
ASTM A 179	MW	0.06-0.18	0.27-0.63	0.048	0.048	-	-	-	325 MIN	180 MIN	35.0	Hardness 72 HRB Max
ASTM A 214	MW	0.18 MAX	0.27-0.63	0.050	0.050	-	-	-	385 MIN	180 MIN	35.0	Hardness 72 HRB Max
ASTM A 192	MW	0.06-0.18	0.27-0.63	0.048	0.048	0.2 MAX	-	-	325 MIN	180 MIN	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	380 MIN	205 MIN	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	365 MIN	195 MIN	30/22	Hardness 81 HRB Max
ASTM A 209/T1B	MW	0.14 MAX	0.30-0.80	0.045	0.045	0.10-0.50	-	0.44-0.65	415 MIN	220 MIN	30/22	Hardness 77 HRB Max
ASTM A 210/A-1	MW	0.27 MAX	0.93 MAX	0.058	0.058	0.10 MIN	-	-	415 MIN	255 MIN	30/22	Hardness 79 HRB Max
ASTM A 210/C	MW	0.35 MAX	0.29-1.06	0.058	0.058	0.10 MIN	-	-	485 MIN	275 MIN	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	415 MIN	205 MIN	30/22	Hardness 85 HRB Max
ASTM A 213/T5	MW	0.15 MAX	0.30-0.60	0.030	0.030	0.50 MAX	4.00-6.00	0.44-0.65	415 MIN	205 MIN	30/22	Hardness 85 HRB Max
ASTM A 213/T11	MW	0.15 MAX	0.30-0.60	0.030	0.030	0.50-1.00	1.00-1.50	0.44-0.65	415 MIN	205 MIN	30/22	Hardness 85 HRB Max
ASTM A 213/T12	MW	0.15 MAX	0.30-0.61	0.045	0.045	0.50 MAX	0.80-1.25	0.44-0.65	415 MIN	220 MIN	30/22	Hardness 85 HRB Max
ASTM A 213/T22	MW	0.15 MAX	0.30-0.60	0.030	0.030	0.50 MAX	1.90-2.60	0.87-1.13	415 MIN	205 MIN	30/22	Hardness 85 HRB Max
ASTM A 333/1	AW	0.30 MAX	0.40-1.06	0.025	0.025	-	-	-	380 MIN	205 MIN	25/20	IMPACT TEST-50F
ASTM A 333/6	AW	0.30 MAX	0.29-1.06	0.025	0.025	0.10 MIN	-	-	415 MIN	240 MIN	30/22	40X10J/18/14
ASTM A 334/1	AW	0.30 MAX	0.40-1.06	0.025	0.025	-	-	-	380 MIN	205 MIN	35/28	-50F 40X10J/18/14
ASTM A 334/6	MW	0.30 MAX	0.29-1.06	0.025	0.025	0.10 MIN	-	-	415 MIN	240 MIN	30/22	90 HRB MAX
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	380 MIN	205 MIN	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	380 MIN	205 MIN	30/22	
ASTM A 335/P5	AW	0.15 MAX	0.30-0.60	0.025	0.025	0.50 MAX	4.00-6.00	0.45-0.65	415 MIN	205 MIN	30/22	
ASTM A 335/P9	AW	0.15 MAX	0.30-0.60	0.025	0.025	0.25-1.00	8.00-10.00	0.09-1.10	415 MIN	172 MIN	30/22	
ASTM A 335/P11	AW	0.15 MAX	0.30-0.60	0.025	0.025	0.50-1.00	1.00-1.50	0.44-0.65	415 MIN	205 MIN	30/22	
ASTM A 335/P12	AW	0.15 MAX	0.30-0.61	0.025	0.025	0.50 MAX	0.80-1.25	0.44-0.65	415 MIN	205 MIN	50/22	
ASTM A 335/P22	AW	0.15 MAX	0.30-0.60	0.025	0.025	0.50 MAX	1.90-2.60	0.87-1.13	415 MIN	205 MIN	30/22	
BS/3059/1/33		0.15 MAX	0.30-0.70	0.050	0.050	-	-	-	324-441	186 MIN	25	
BS/3059/2/33		0.15 MAX	0.40-0.70	0.050	0.050	0.10-0.35	-	-	324-441	186 MIN	21	
BS/3059/2/45		0.12-0.18	0.90-1.20	0.035	0.035	0.10-0.35	-	-	441-560	245 MIN	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	235 MIN	22	
DIN/1715/ST35.8		0.17 MAX	0.40 MIN	0.040	0.040	0.35 MAX	-	-	340-441	235 MIN	25	
DIN/17175/ST45.8		0.22 MAX	0.45 MIN	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	284 MIN	21	
DIN17175/13CrMO44		0.10-0.18	0.40-0.70	0.040	0.040	0.10-0.35	0.70-0.16	0.40-0.50	441-570	294 MIN	22	
DIN17175/10CrM910		0.15 MAX	0.40-0.60	0.040	0.040	0.15-0.50	2.0-2.5	0.9-1.10	441-570	294 MIN	22	
ASTM A 199/T5	MW	0.50-0.15	0.30-0.60	0.030	0.030	0.50 MAX	4.00-6.00	0.45-0.65	415 MIN	170 MIN	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	415 MIN	170 MIN	30/22	Hardness 85 HRB Max
ASTM A 199/T22	MW	0.05-0.15	0.30-0.60	0.030	0.030	0.50 MAX	1.0-2.60	0.87-1.13	415 MIN	170 MIN	30/22	Hardness 85 HRB Max
ASTM A 199/T4	MW	0.15 MAX	0.30-0.60	0.030	0.030	0.50-1.00	2.15-2.85	0.44-0.65	415 MIN	170 MIN	30/22	Hardness 85 HRB Max
ASTM A 199/T7	MW	0.15 MAX	0.30-0.60	0.030	0.030	0.50-1.00	6.00-8.00	0.45-0.65	415 MIN	170 MIN	30/22	Hardness 85 HRB Max
ASTM A 200/T5	MW	0.15 MAX	0.30-0.60	0.030	0.030	0.50-1.00	4.00-6.00	0.45-0.65	415 MIN	170 MIN	30/22	Hardness 85 HBR 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	415 MIN	170 MIN	30/22	Hardness 85 HRB Max
ASTM A 200/T22	MW	0.05-0.15	0.30-0.60	0.030	0.030	0.50 MAX	1.90-2.60	0.87-1.13	415 MIN	170 MIN	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	415 MIN	170 MIN	30/22	Hardness 85 HRB Max
ASTM A 200/T7	MW	0.15 MAX	0.30-0.60	0.030	0.030	0.50-1.00	6.00-8.00	0.45-0.65	415 MIN	170 MIN	30/22	Hardness 85 HRB Max
ASTM A 199/T9	MW	0.15 MAX	0.30-0.60	0.030	0.030	0.25-1.00	8.00-10.0	0.90-1.00	415 MIN	170 MIN	30/22	Hardness 85 HRB Max

COMPARISION TABLE OF DIN - ASTM - API - BS

		Tensile Strength		Yield Point		Elon-gation	%C	%C	%SI	% Min	%	%	%	%	Standad	TECHNICAL	CORRESPONDING QUALTITY		
		daN/mm² kg/mm² abt.	ltn/in² abt.	daN/mm² kg/mm² abt.	ltn/in² abt.	Min% abt					P=max	S=max	Mo	Cr	for Size + Tol	SPEC.	ASA	DIN	BS
DIN	St 00	35-45	22-29	24	15	25	0	0	0	0	0	0	0		Din 2448	Din 1629/2	0	0	0
	St 36	35-45	22-29	24	15	25	0-18			0.05	0.05				Din 2448	Din 1629/3	A 53 A		3601 HFS22
	St 46	35-55	29-35	26	16.5	21	0.25			0.05	0.05				Din 2448	Din 1629/3	A 53 B		3601 HFS 27
	St 55	55-65	35-41	30	19	17	0.36			0.05	0.05				Din 2448	Din 1629/3			3601 HFS 35
	St 52	52-62	33-29	36	23	22	0.20	0.55	1.50	0.05	0.05				Din 2448	Din 1629/3			
	St 35.8	35-45	22-29	24	15	25	0.17	0.35	4.04	0.05	0.05				Din 2448	Din 17175	A 106 A		3059/1-2
	St 45.8	45-55	29-35	26	16.5	21	0.22	0.10/0.35	0.40/0.60	0.045	0.05				Din 2448	Din 17175	A 106 B		3059/5-6
	TT St 35 N	35-45	22-29	23	14.5	25	0.16	0.10/0.35	0.50/0.80	0.04	0.04				Din 2448	SE WERKSTOFF			
																BLATT680	A 333GR1		3603LT27
	15 Mo 3	45-55	29-35	29	18.5	22	0.12/0.20	0.15/0.35	0.05/0.80	0.04	0.04	5.25/0.35			Din 2448	Din 17175	A 935 PI		3059/7-8
	16 Mo 5	38.7	24				0.10/0.20	0.10/0.50	0.30/0.80	0.045		0.045/0.65			Din 2448	WORKST BL 210	A 335 PI		3059/7-8
	13 Cr Mo 44	45-58	29-37	30	19	22	0.010/0.18	0.15/0.35	0.40/0.070	0.04	0.04	0.40/0.50	0.70/1.00		Din 2448	Din 17175	A 335 P12/P11		6304 GR 620
	10 Cr Mo 910	45-60	29-38	27	17	20	0.15	0.15/0.50	0.40/0.60	0.04	0.04	0.90/1.10	2.0/2.50		Din 2448	Din 17175	A 335 P22		36004 GR 622
	12 Cr Mo 195	42	27	18	11.5	21	0.15	0.50	0.30/0.60	0.03	0.04	0.45/0.65	4.6		Din 2448	WORKST BL 231	A335 P5		3600 GR 625
	Machanical C 35	60	38	32	20	0.20	0.35	0.40	0.60	0.04	0.035				Din 17200				
	St 52.3	52-62	33-39	34	21.5	22	0.20	0.55	1.50	0.05	0.05				Din 17100				
ASTM	ASTM A 53 A	33.7	21	21.1	13.5	35		(0.10-0.30)		0.048					ASAB 36.10	AP1 5L GR A	St 35		3601HPS22
	A 53 B	42.2	27	24.6	15.5	30		(0.10-0.30)		0.048					ASAB 36.10	AP1 5L GR B	St 45		3601HFS27
	A 106 A	33.7	21	21.1	13.5	35	0.25	0.10	0.27/0.93	0.048	0.058				ASAB 36.10	AP1 5L GR A	St 35.8		3059/1-2
	A 106 B	42.2	27	24.6	15.5	30	0.30	0.10	0.29/1.06	0.048	0.058				ASAB 36.10	AP1 5L GR B	St 45.8		3059/5-6
	ASTM A 333/1	38.7	24.5	21.1	13.5	35	0.30		0.10/1.06	0.05	0.06				ASAB 36.10		TT St 35N		3503J.T.27
	A333/3	45.7	29	24.6	15.5	30	0.19	0.18/0.37	0.31/0.64	0.05	0.05			3.18/3.82	ASAB 36.10		10NI 14		3603 503LT
	ASTM A 335 P1	38.7	24.5	21.1	13.5	30	0.10/0.20	0.10/0.50	0.30/0.60	0.045	0.045	0.44/0.65			ASAB 36.10		15 Mo 3 16 Mo 5		100 3059/7-8
	P2	38.7	24.5	21.1	13.5	30	0.10/0.20	0.10/0.20	0.30/0.61	0.045	0.045	0.44/0.65	0.50/0.81		ASAB 36.10		13 GR Mo 44		
	P11	42.2	27	21.1	13.5	30	0.15	0.50/1.00	0.30/0.60	0.03	0.03	0.44/0.65	1-1.5		ASBA 36.10		13 CR Mo 44		3604GR621
	P12	42.2	27	21.1	13.5	30	0.15	0.50	0.30/0.61	0.045	0.045	0.44/0.65	0.8/125		ASBA 36.10		13 CR Mo 44		3604GR620
	P22	42.2	27	21.1	13.5	30	0.15	0.50	0.30/0.60	0.03	0.03	0.87/1.13	1.9/2.6		ASAB 36.10		10 CR Mo 910		3604GR622
	P5	42.2	27	21.1	13.5	30	0.15	0.50	0.30/0.60	0.03	0.03	0.45/0.65	4.6		ASAB 36.10		12 CR Mo 195		3604GR625
APILINEPIPE	API5L GR. A	33.7	21	21.1	13.5	variable	0.22		0.09	0.04	0.04				ASAB 36.10		ASTMA 53 A		
	API 5L GR. B	42.2	27	24.6	15.5	,,	0.27		1.25	0.04	0.04				ASAB 36.10		ASTMA 53 B		
	API 5L N X 42	42.2	27	29	19	,,	0.29		1.25	0.05					ASAB 36.10				
	API 5 X 46	44.3	28	32.2	20	,,	0.31		1.35	0.04	0.05				ASAB 36.10				
	API 5L X 56	49.9	31.5	39.2	25	,,	0.26		1.35	0.04	0.05				ASAB 36.10				
	API 5L X 60	52.7	33.5	42.2	27	,,	0.26		1.35	0.04	0.05				ASAB 36.10				
	API 5 LX 65	56.2	35.5	45.7	29	,,	0.26		1.40	0.04	0.05				ASAB 36.10				
BS	BS 3601 HFS 22	34.6	22	21.3	13.5	700	0.22		0.70	0.05	0.05						A 53 A		
						ts=tonsf.ub²													
	BS 3601HFS 27	42.5	27	25.2	16	,,	0.25		0.70	0.05	0.05						A 53 B		
	BS 3601 HFS 35	55.1	35	31.5	20	,,	0.40	1.20	0.05	0.05	0.05								
	BS 3602 HFS 23	36.2-47.2	23-30	21.3	13.5	,,	0.20	(0.10-0.35)	0.30/0.70	0.05	0.05						A 106 A		
	BS 3602 HFS 27	42.5-55.1	27-35	25.2	16	,,	0.25	(0.10-0.35)	0.30/0.70	0.05	0.05						A 106 B		
	BS 3602 HFS 35	52.1-67.7	35-45	31.5	20	,,	0.35	(0.10-0.35)	0.70/0.10	0.05	0.05						A 106 C		
	BS 30593 ERW	31.5-44.1	20-28	-	-	,,				0.05	0.05								

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SUMMARY OF THE MAIN ASTM STANDARDS GENERALLY USED FOR PIPING

ASTM	Grade	Chemical requirements percent (%)										Mechanical requirements				
		C max	Mn max	P max	S max	Si max	Ni	Cr.	Mo	Cu	Others	Tensile strength mini-MPa/Psi	Yeild strength mini-MPa/Psi	Elong mini %	Impact test at C	F
A 53	Types A	0.25	0.95	0.05	0.06		0.40 max	0.40 max	0.15 max	0.40 max	0.08 max	330-4800	205-30000	36		
	B	0.30	1.20	0.05	0.06		0.40 max	0.40 max	0.15 max	0.40 max	0.08 max	415-6000	240-35000	29.5		
A 106	A	0.25	0.27-0.93	0.035	0.025	0.10mini	0.40 max	0.40 max	0.15 max	0.40 max	0.08 max	330-48000	205-30000	L35-T25		
	B	0.30	0.29-1.06	0.035	0.025	0.10mini	0.40 max	0.40 max	0.15 max	0.40 max	0.08 max	415-60000	240-35000	L30-T16.5		
	C	0.35	0.29-1.06	0.035	0.025	0.10mini	0.40 max	0.40 max	0.15 max	0.40 max	0.08 max	485-70000	275-40000	L30-T16.5		
A 312	TP 304	0.08	2.00	0.040	0.030	0.75	8.00-11.0	18.0-20.0				515-75000	205-30000	L35-T25		
	TP 304L	0.035	2.00	0.040	0.030	0.75	8.00-13.0	18.0-20.0				485-70000	170-25000	L35-T25		
	TP 310S	0.08	2.00	0.045	0.030	0.75	19.0-22.0	24.0-26.0	0.75 max			515-75000	205-30000	L35-T25		
	TP 316	0.08	2.00	0.040	0.030	0.75	11.00-14.0	16.0-18.0	2.00-3.00			515-75000	205-30000	L35-T25		
	TP 316L	0.035	2.00	0.040	0.030	0.75	10.00-15.0	16.0-18.0	2.00-3.00			485-70000	170-25000	L35-T25		
	TP 317L	0.035	2.00	0.040	0.030	0.75	11.00-15.0	18.0-20.0	3.00-4.00			515-75000	205-30000	L35-T25		
	TP 321	0.08	2.00	0.040	0.030	0.75	9.00-13.0	17.0-20.0			5C<Ti0.7%	515-75000	205-30000	L35-T25		
	TP 347	0.08	2.00	0.040	0.030	0.75	9.00-13.0	17.0-20.0			10Cb+Ta<1.00%	515-75000	205-30000	L35-T25		
A 333	3	0.19	0.31-0.64	0.025	0.025	0.18-0.37	3.18-3.82					450-65000	205-35000	L35-T20	-100	-150
	4	0.12	0.50-0.05	0.025	0.025	0.18-0.37	0.47-0.98	0.44-1.01		0.40-0.75	Ai:0.04-0.30%	415-60000	240-35000	L30-T16.5	-100	-150
	6	0.30	0.29-1.06	0.025	0.025	0.10 mini						415-60000	240-35000	L30-T16.5	-45	-50
	7	0.19	0.90	0.025	0.025	0.13-0.32	2.03-2.57					450-65000	240-35000	L30-T22	-75	-100
	8	0.13	0.90	0.025	0.025	0.13-0.32	8.40-9.60					690-100000	515-75000	L22	-195	-320
	9	0.20	0.40-0.06	0.025	0.025		1.60-2.24			0.75-1.25		435-63000	315-46000	L28	-75	-100
A 335	P1	0.10-0.20	0.30-0.80	0.025	0.025	0.50			0.44-0.65			380-55000	205-30000	L30-T20		
	P2	0.10-0.20	0.30-0.61	0.025	0.025	0.10-0.30		0.50-0.81	0.44-0.65			380-55000	205-30000	L30-T25		
	P5	0.15	0.30-0.60	0.025	0.025	0.50		4.00-6.00	0.45-0.65			415-60000	205-30000	L30-T20		
	P9	0.15	0.30-0.60	0.025	0.025	0.25-1.00		8.00-10.0	0.90-1.10			415-60000	205-30000	L30-T20		
	P11	0.15	0.39-0.60	0.025	0.025	0.50-1.00		1.00-1.50	0.44-0.65			415-60000	205-30000	L30-T20		
	P12	0.15	0.30-0.61	0.025	0.025	0.50		0.80-1.25	0.44-0.65			415-60000	205-30000	L30-T20		
	P15	0.05-0.15	0.30-0.60			1.15-1.65			0.44-0.65			415-60000	205-30000	L30-T20		
	P21	0.15	0.30-0.60	0.025	0.025	0.50		2.65-3.35	0.80-1.06			415-60000	205-30000	L30-T20		
	P22	0.15	0.30-0.60	0.025	0.025	0.50		1.90-2.60	0.87-1.13			415-60000	205-30000	L30-L20		
	P91	0.08-0.12	0.30-0.60	0.020	0.010	0.20-0.50	0.40 max	8.00-9.50	0.85-1.05		N0.30-0.70% Ai0 .04%max/0.06-0.10 0,18-0.25	585-85000	415-65000	L20		
A 358	TP304	0.08	2.00	0.045	0.030	0.75	8.0-10..50	18.0-20.0	-			Class 1 : Double welded pipes & full Radiography				
	TP310S	0.08	2.00	0.045	0.030	0.75	19.0-22.0	24.0-26.0	-			Class 2 : Double welded no Radiography				
	TP316	0.08	2.00	0.045	0.030	0.75	10.0-14.0	16.0-18.0	2.0-3.0			Class 3 : Single welded full Radiography				
	TP 316L	0.030	2.00	0.045	0.030	0.75	10.4-14.0	16.0-18.0	2.0-3.0			Class 4 : Single welded full Radiography root pass without addition of filler metal				
	TP 317L	0.035	2.00	0.045	0.030	0.75	11.0-15.0	18.0-20.0	3.0-4.0							
	TP 321	0.08	2.00	0.045	0.030	0.75	9.0-12.0	17.0-19.0	-		N0.10 max	Class : Double Welded spot Radiography				
	TP 347	0.08	2.00	0.045	0.030	0.75	9.0-13.0	17.0-19.0	-		Cb+TA10xC/10					

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

Tel.: 022-6651 8987 • Fax : 022-6743 7496 • Mob. : 98332 81267 / 98204 78402

PHYSICAL & CHEMICAL PROPERTIES OF STAINLESS STEEL, ALLOY STEEL & CARBON STEEL BARS

ASTM A479 STAINLESS STEEL ROUND BAR CHEMICAL & PHYSICAL PROPERTIES

ASTM GRADE	C	Mn	Si	S	P	Cr	Ni	Mo	Other	Tensile Psi (MPa)	Yield Psi (Mpa)	Elongation Strip/Round	Hardn.	Reduction in Area (%)
304	0.08 max	2.00 max	1.00 max	0.030 max	0.045 max	18.0 20.0	8.0 10.5	--	--	75000 (515)	30000 (205)	30	--	40
316	0.08 max	2.00 max	1.00 max	0.030 max	0.045 max	16.0 18.0	10.0 14.0	2.0 3.0		75000 (515)	30000 (205)	30	--	40
317L	0.035 max	2.00 max	1.00 max	0.030 max	0.045 max	18 20.0	11.0 15.0	3.0 4.0		75000 (515)	30000 (205)	30	--	40
310S	0.08 max	2.00 max	1.00 max	0.030 max	0.045 max	24.0 26.0	19.0 22.0		--	75000 (515)	30000 (205)	30	--	40
347H	0.04 0.10	2.00 max	1.00 max	0.030 max	0.040 max	17.0 19.0	9.0 13.0		Cb-BxC -13.0	75000 (515)	30000 (205)	30	--	40
321	0.08	2.00 max	1.00 max	0.030 max	0.045 max	17.0 19.0	9.0 12.0		5(C+N)<Ti <0.70%	75000 (515)	30000 (205)	30	--	40

ASTM A182 ALLOY STEEL ROUND BAR CHEMICAL & PHYSICAL PROPERTIES

ASTM GRADE	C	Mn	Si	S	P	Cr	Ni	Mo	Other	Tensile Psi (MPa)	Yield Psi (Mpa)	Elongation Strip/Round	Hardn.	Reduction in Area (%)
A 182F11 Class2	0.10 0.20	0.30 0.80	0.50 1.00	0.04 max	0.04 max	1.00 1.50	--	0.44 0.65	--	70000 (45.46)	40000 (275)	20	143-207	30
A182F22 Class 3	0.05 0.15	0.30 0.60	0.50 max	0.04 max	0.04 max	2.00 2.50	--	0.87 1.13	--	75000 (52.52)	45000 (31.7)	20	156-207	30
A 182F5	0.15 max	0.30 0.60	0.50 max	0.03 max	0.03 max	4.00 6.00	0.5 max	0.44 0.65	--	70000 (48.45)	40000 (27.05)	20	143-217	35
A182F9	0.15 max	0.30 0.60	0.50 1.00	0.03 max	0.03 max	8.00 10.0	--Q	0.90 1.10	--	85000 (56.65)	55000 (380)	20	179-217 (BHN)	40

IS-1875 / ASTM A105 CARBON STEEL ROUND BAR CHEMICAL & PHYSICAL PROPERTIES

ASTM GRADE	C	Mn	Si	S	P	Cr	Ni	Mo	Other	Tensile Psi (MPa)	Yield Psi (Mpa)	Elongation Strip/Round	Hardn.	Reduction in Area (%)
A 1-5 / IS 1875	0.35 max	0.60 1.05	0.35 max	0.50 max	0.040 max	--	--	--	--	70000 (485)	36000 (250)	30-Strip 22-Round	187 max	30 Round
AL-F2	0.30 max	1.35 max	0.15 0.30	0.040 max	0.035 max	0.30 max	0.40 max	0.12 max	Cu-0.4 max Cb-0.02 max Va-0.3 max	70000-95000 (485-655)	36000 (250)	30-Strip 22-Round	20/16 (-45-6°)	30 Round

E-Mail: jaypeemetal@yahoo.com / jpferrometal@gmail.com / info@jaypeeferrometal.com

Valves

Needle Valves :

Needle valves are designed in Screwed bonnet type & integral bonnet type with male or female screwed ends also available in bw / tube ends etc.

Material : SS 304 / SS 316 / Carbon Steel / Monel / Hastelloy 'C' & Brass
Test Pressure : upto 420 Kg/cm2 (High pressure valves also available on request)
Range : 1/8 to 2"
Applications : Needle valve are generally used in Food process Industries
Chemical Plants, OIl & Petro Chemical Industries, Test Bench etc.

Ball Valves : (Medium Pressure & High Pressure)

Ball valves are designed in three , design with scrwed female nd connections. Also end connections are available with tube ends etc.

Material : SS 316, SS 304, Carbon Steel, Brass
Test Pressure : upto 200 Kg/cm2 for Medium pressure & 400 Kg/cm2 for High Pressure
Range : 1/8 to 2"
Applications : These valves are generally useful where the full flow is required,
For example, Oil & Petro chemical Industries, test bench etc.

Globe Valve :

Globe valves in union bonnet type & o s & y type (with separate body & yoke fitted with bolts) In which the separate seat & globe were provided, these valves are available with end connection scrwed / sw / bw & Tube ends etc.

Material : A479/A182 Gr. F SS 316, SS 304, A 105
Range : 1/4 to 2"
Test Pressure : upto 420 Kg/cm2 (High Pressure Valves also available on request)
Applications : Generally these valves are useful in Sugar Plants, Chemical & Mining Industries,
Refineries, Power Plants etc.

Non Return Valve :

Inline NR V's are designed in two piece design. These valves are generally useful where the flow is required in one direction these valves are available in Screwed & Tube end connections.

Material : SS 316, SS 304, Carbon Steel
Range : 1/8 to 2"
Test Pressure : Hydtrostatic - Body - 420 Kg/cm2
- Seat - 270 Kg/cm2 At Room Temp.
Pneumatic - Seat - 40 Kg/cm2

Adjustable Valve (Snubber) :

These are availble in screwed design and suitable for adjusting the flow.

Test Pressure :
Hydtrostatic : Body - 420 Kg/cm2
Seat - 270 Kg/cm2 At Room Temp.
Pneumatic : Seat - 40 Kg/cm2
Material : A 105, A276 SS 304, A276 SS 316, Monel, Hastelloy

Flow Control Valve :

These Valves are available in two types a) Flow control Needle Valve b) Flow Control Check Valve

Material : SS 316, SS 304, Carbon Steel
Range : 1/8 to 1"
Test Pressure : Hydtrostatic - Body - 420 Kg/cm2
- Seat - 270 Kg/cm2 } At Room Temp.
Pneumatic - Seat - 40 Kg/cm2

Switching Service Ball Valve :

These valves are designed for instrumentation panels and for steam, oxygen lines etc.
These valves are available in following types
a) Two way Ball Valve b) Three way Ball Valve c) Four way Ball Valve
Three valves are available with Tube & Screwed ends.

Material : SS 304, SS 316, Brass & CS
Range : 1/8 to 1/2"
Test Pressure : Hydtrostatic - Body - 420 Kg/cm2, Seat - 270 Kg/cm2
Pneumatic - Seat - 40 Kg/cm2
} At Room Temp.

Manifolds

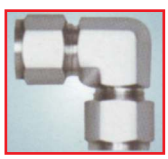
Our specially is in Manifolds. We have several types of Manifolds divided into various types.

 **2 Valve Manifold** a) Straight type b) Angle type	 **2 Valve Manifold** "T" type (Integral type)	 **2 Valve Manifold** Separately Mounted type
 **3 Valve Manifold** Separately Mounted type	 **3 Valve Manifold** "T" type (Integral type)	 **3 Valve Manifold** "H" type (Flange to flange)
 **5 Valve Manifold** Separately Mounted type	 **5 Valve Manifold** "T" type (Integral type)	 **5 Valve Manifold** "H" type (Flange to flange)

Applications - These manifolds are generally used in instrumentation & Automation for Pressure gauges, Transmitters, Differential transmitters, Static pressure etc.

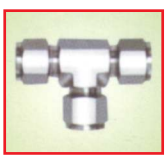
Material - SS 316, SS 304, Carbon Steel
Range - 1/8 to 1"
Test Pressure - -
Hydrostatic - Body - 420 Kg/cm2, Seat - 270 Kg/cm2
Pnenumatic - Seat - 40 Kg/cm2
} At Room Temp.

S. S. INSTRUMENTATION FERRULE FITTINGS

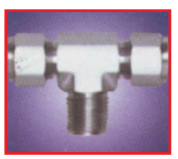

Union Elbow

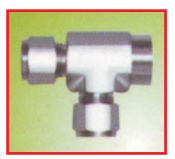

Male Elbow


Female Elbow


Union Tee

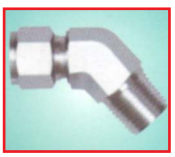

Male Run Tee


Male Branch Tee

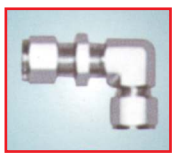

Female Run Tee


Female Branch

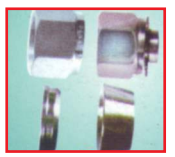

Union Cross


45º Elbow


Tube end Closure


Bulk Head Elbow


Positionable Male Elbow

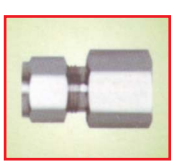

Nut Ferrule

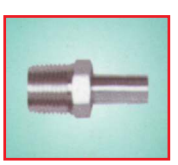

Union

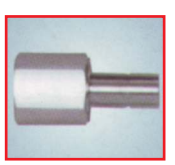

Reducing Union


Bulkhead Union


Male Connector


Female Connector


Male Adaptor


Female Adaptor

FORMULA OF CALCULATING WEIGHT

1) **Weight of Stainless Steel Pipe**
O.D. (mm) - W. Thick (mm) x W. Thick (mm) x 0.0248 = Wt. Per Mtr.
O.D. (mm) - W. Thick (mm) x W. Thick (mm) x 0.00756 = Wt. Per Feet

2) **Weight of Stainless Steel Round Bar**
Dia (mm) Dia (mm) x 0.00623 = Wt. Per Mtr.
Dia (mm) x Dia (mm) x 0.0019 = Wt. Per Feet

3) **Weight of Stainless Steel Square Bar**
Dia (mm) x Dia (mm) x 0.00788 = Wt. Per Mtr.
Dia (mm) x Dia (mm) x 0.0024 = Wt. Per Feet

4) **Weight of Stainless Steel Hexagonal Bar**
Dia (mm) x Dia (mm) x 0.00680 = Wt. Per Mtr.
Dia (mm) x Dia (mm) x 0.002072 = Wt. per Feet

5) **Weight of Stainless Steel Flat Bar**
Width (mm) x Thickness (mm) x 0.00798 = Weight per Mtr.
Width (mm) x Thickness (mm) x 0.00243 = Weight per Feet

6) **Weight of Stainless Steel Sheets & Plates**
Length (Mtrs.) x Width (Mtrs.) x Thick (mm) x 8 = Weight per PC
Length (Feet) x Width (Feet) x Thick (mm) x 3/4 = Weight per PC

7) **Weight of Stainless Steel Circle**
Dia (mm) x Dia (mm) x Thick (mm) / 160 = Gms. per PC
Dia (mm) x Dia (mm) x Thick (mm) x 0.0000063 = Kg. per PC

8) **Weight of Brass Pipes / Copper Pipes**
O.D. (mm) - W. Thick (mm) x W. Thick (mm) x 0.0260 = Wt. per Mtr.

9) **SA Pipe**
Total of 4 side 3.14 = Round Pipe Size

10) **Weight of Aluminium Pipe**
O.D. (mm) - W. Thick (mm) x W. Thick (mm) x 0.0083 = Wt. per Mtr.

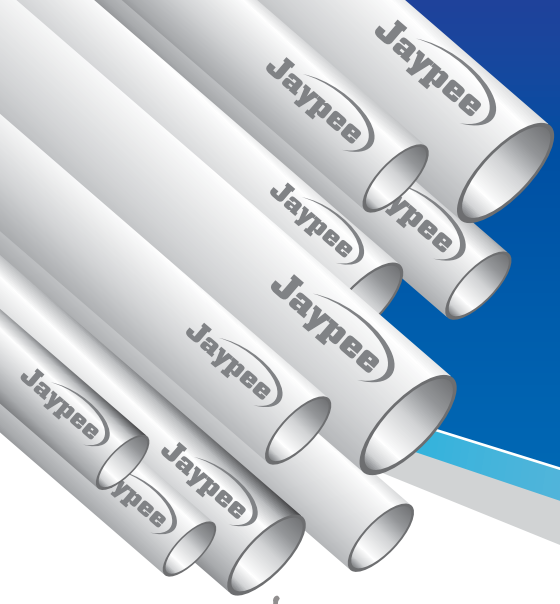
11) **Weight of Aluminium Sheet**
Length (Mtrs) x Width (Mtrs) x Thick (mm) x 2.69 = Weight per PC

12) **Weight of Square Pipe**
OD (mm) x 4 ÷ 3.14 = OD

1 METER	= 3.281 FEET
1 FT.	= 304.8 MM
1 INCH	= 25.4 MM (1000 THOUGH)
1 MM	= 39.37 THROUGH
MACRO	= TEST OF CHECK WHETHER PIPE OF TUBE IS SEAMLESS OR WELDED
MICRO	= TEST OF CHECK BRAIN STRUCTURE OF SPECIMEN

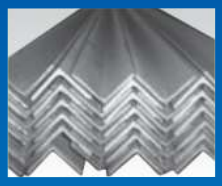
Industrial Application

- BEVERAGE
- CEMENT
- CHEMICALS & FERTILIZERS
- CONSTRUCTION
- ENGINEERING
- FOOD
- NUCLEAR & THERMAL
- OIL & GAS
- PAPER & PULP
- PHARMACEUTICALS
- REFINERIES & PETROCHEMICALS
- SHIP BUILDING
- SUGAR



WE DO NOT COMPROMISE IN QUALITY






Flanges ForgedFittings Pipes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Printed by : SIVAN PRINTERS, 93234 42310