



AMBIKA METAL INDUSTRIES

GSTIN : 27AZQPD0128B1ZU

Manufacturer, Exporter & Supplier of Refractory Anchors

Stockist & Suppliers of : Stainless Steel Sheet, Coil, Plates, Pipes, Other Ferrous & Non Ferrous Material.

S.S Seamless Pipes & Pipe Fittings, M.S. Seamless Pipes & Pipe Fittings etc.

PIPES | TUBES | PIPE FITTINGS | FLANGES | ANCHORS | ROUND BARS | VALVES | PLATE | ANGLE-CHANNEL



MUMBAI OFFICE : Office No 5, 3 Floor Building No F/3, Plot No 02

Sector 3E/B Kalamoli Navi Mumbai - 410218.

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AN ISO 9001:2015 CERTIFIED CO.

About Us

Ambika Metal Industries is one of the leading firm engaged in manufacturing & Processing large variety of Butt-Welding / Forged Pipe-Fittings, Flanges in Stainless Steel, Carbon Steel, Alloy Steel, Nickel/Super Alloys & Many other Ferrous / Non-Ferrous Metals.

We have complete facilities for manufacturing of Butt-weld Fitting & Long Radius Piggable Bends. For producing above we have Hot Forging, Cold Forging, Bending, Pressing, Welding, Grinding, Handling, Hydraulic Testing, Heat Treatment, Annealing, Shot Blasting, Pickling & Passivation, Anti Rust Coating & Packing Facilities.

Every manufacturing phase, from forging to welding, machining to testing, is carried out with a vast array of modern equipment and Machinery. Each material is controlled through out the manufacturing phases, thanks to rigorous QA & QC procedures and external chemical & mechanical laboratories well equipped to perform both destructive & non-destructive examinations. We provide original Material Test Certificates, Government / Lloyds approved Laboratory Test certificates and Guarantee / Warranty Certificates for the supplies.



Product Range



Butt-Weld Fitting

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

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

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

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

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

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

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



Flanges

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

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

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

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

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

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

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



Socket-Weld Fitting

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

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

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

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

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



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Right product for the right requirement at the right price, i.e. rather than a mere supplier of the product we take utmost in understanding the client's requirement, identifying the right product at the price. This has resulted in close ties with major customers within India. No wonder we are a regular supplies to various clients across industries like Petrochemical Industries, Chemical Industries, Pharmaceutical companies, Pulp & Paper mill, Sugar Factories, Oil Refineries, Nuclear and Thermal Power stations, Breweries and many other small, medium and large scale units & Defense Departments.

We would like to established business relations with reputed concern like Yours. We assure you that will certainly find in our products quality and rates most competitive. Your Satisfaction is the award for our good quality and service.

THIRD PARTY INSPECTION

We also accept third party inspection by reputed agencies like:



DET NORSKE VERITAS



BUREAU VERITAS



Nuclear Power Corp. of India Ltd.



TUV INDIA
TUV NORD GROUP



पी डी आई एल
PDIL



Lloyd's Register



EIL



SGS



TATA PROJECTS



Bharat Heavy Electricals Ltd.



Larsen & Toubro Ltd.



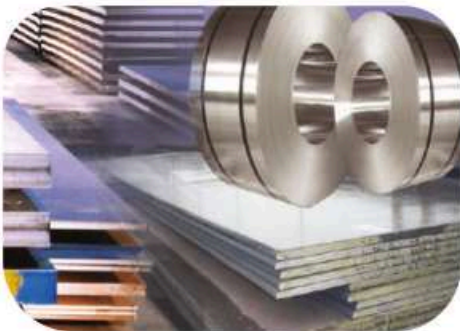
HEG Ltd.



TUV SUD



Germanischer Lloyd



Sheet, Plate & Coil

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

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



Fasteners

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

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

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

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

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



S.S, C.S & Alloy Steel Pipes

We are one of the most trusted stockist for offering finest range of Stainless Steel, Nickel Alloy Steel Carbon Steel & Alloy Steel. 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.

Stainless Steel : ASTM / ASME SA 312 GR. TP 304, 304L, 304H, 309S, 309H, 310S, 310H, 316, 316Ti, 316H, 316LN, 317, 317L, 321, 321H, 347, 347H, 904L.

Carbon Steel : ASTM / ASME A 53 GR. A & B, ASTM A 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 GR. A, 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,



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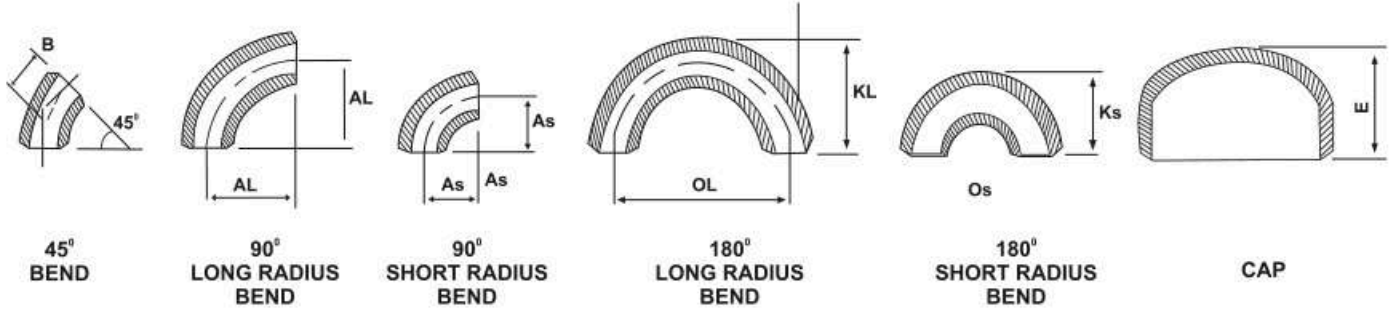
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BUTT WELDING ELBOW



DIMENSIONS

NOM. PIPE SIZE		O.D	45° BEND	90° BEND LONG RAD	90° BEND SHORT RAD	180° BEND LONG RAD		180° BEND SHORT RAD		THICKNESS 'T'			
IN	MM	D	B	AL	AS	OL	KL	OS	KS	SCH 10	SCH 40	SCH 80	CAPS E
1/2	15	21.30	16	38	-	76	49	-	-	2.11	2.77	3.73	25.0
3/4	20	26.67	11	29	-	57	43	-	-	2.11	2.87	3.91	25.0
1	25	33.40	22	38	25	76	56	51	41	2.77	3.38	4.55	38.0
1 1/4	32	42.20	25	48	32	95	70	64	52	2.77	3.56	4.85	38.0
1 1/2	40	48.30	29	57	38	114	83	76	62	2.77	3.68	5.08	38.0
2	50	60.30	35	76	51	152	106	102	81	2.77	3.9	5.55	38.0
2 1/2	65	73.00	44	95	64	191	132	127	100	3.05	5.16	7.01	38.0
3	80	88.90	51	114	76	229	159	152	121	3.05	5.49	7.62	51.0
4	100	114.30	64	152	102	305	210	203	159	3.05	6.02	8.55	64.0
5	125	141.30	79	190	127	381	262	254	197	3.40	6.55	9.53	76.0
6	150	168.30	95	229	152	457	313	305	237	3.40	7.11	10.97	89.0
8	200	219.10	127	305	203	610	414	406	313	3.76	8.18	12.7	102.0
10	250	273.00	159	381	254	762	518	508	391	4.19	9.27	15.09	127.0
12	300	323.90	190	457	305	914	619	610	467	4.57	10.31	17.48	152.0
14	350	355.60	222	533	356	1067	711	711	533	4.78	11.13	19.05	165.0
16	400	406.40	254	610	406	1219	813	813	610	4.78	12.70	21.44	178.0
18	450	457.20	286	686	457	1372	914	914	686	4.78	14.27	23.83	203.0
20	500	508.00	318	762	508	1524	1016	1016	762	5.54	15.09	26.19	229.0
24	600	609.00	381	914	610	1829	1219	1219	914	6.35	17.48	30.96	267.0



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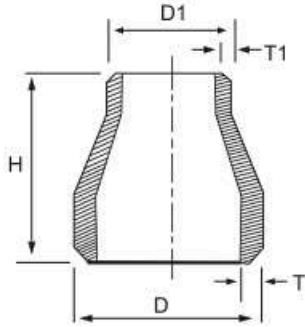
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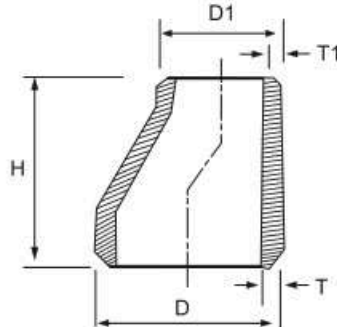
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BUTT WELDING REDUCER-CONCENTRIC & ECCENTRIC



CONCENTRIC REDUCER



ECCENTRIC REDUCER



DIMENSIONS

NOMINAL PIPE SIZE		D x D1	THICKNESS			
IN	MM		T X T1 Sch. 10	T X T1 Sch. 40	T X T1 Sch. 80	H
3/4 x 1/2	20 x 15	26.7 x 21.3	2.11 x 2.11	2.87 x 2.77	3.91 x 3.73	51
1 x 3/4	25 x 20	33.4 x 26.7	2.77 x 2.11	3.38 x 2.87	4.55 x 3.91	51
1 x 1/2	25 x 15	33.4 x 21.3	2.77 x 2.11	3.38 x 2.77	4.55 x 3.73	51
1 1/4 x 1	32 x 25	42.2 x 33.4	2.77 x 2.77	3.56 x 3.38	4.85 x 4.55	51
1 1/4 x 3/4	32 x 20	42.2 x 26.7	2.77 x 2.11	3.56 x 2.87	4.85 x 3.91	51
1 1/4 x 1/2	32 x 15	42.2 x 21.3	2.77 x 2.11	3.56 x 2.77	4.85 x 3.73	51
1 1/2 x 1 1/4	40 x 32	48.3 x 42.2	2.77 x 2.77	3.68 x 3.56	5.08 x 4.85	64
1 1/2 x 1	40 x 25	48.3 x 33.4	2.77 x 2.77	3.68 x 3.38	5.08 x 4.55	64
1 1/2 x 3/4	40 x 20	48.3 x 26.7	2.77 x 2.11	3.68 x 2.87	5.08 x 3.91	64
1 1/2 x 1/2	40 x 15	48.3 x 21.3	2.77 x 2.11	3.68 x 2.77	5.08 x 3.73	64
2 x 1 1/2	50 x 40	60.3 x 48.3	2.77 x 2.77	3.90 x 3.68	5.55 x 5.08	76
2 x 1 1/4	50 x 32	60.3 x 42.2	2.77 x 2.77	3.90 x 3.56	5.55 x 4.85	76
2 x 1	50 x 25	60.3 x 33.4	2.77 x 2.77	3.90 x 3.38	5.55 x 4.55	76
2 x 3/4	50 x 20	60.3 x 26.7	2.77 x 2.11	3.90 x 2.87	5.55 x 3.91	76
2 1/2 x 2	65 x 50	73.0 x 60.3	3.05 x 2.77	5.16 x 3.90	7.01 x 5.55	89
2 1/2 x 1 1/2	65 x 40	73.0 x 48.3	3.05 x 2.77	5.16 x 3.68	7.01 x 5.08	59
2 1/2 x 1	65 x 25	73.0 x 33.4	3.05 x 2.77	5.16 x 3.38	7.01 x 4.55	89
3 x 2 1/2	80 x 65	88.9 x 73.0	3.05 x 3.05	5.5 x 5.16	7.62 x 7.01	89
3 x 2	80 x 50	88.9 x 60.3	3.05 x 2.77	5.5 x 3.09	7.62 x 5.55	89
3 x 1 1/2	80 x 40	88.9 x 48.3	3.05 x 2.77	5.5 x 3.68	7.62 x 5.08	89
3 x 1 1/4	80 x 32	88.9 x 42.2	3.05 x 2.77	5.5 x 3.56	7.62 x 4.85	89
4 x 3	100 x 80	114.3 x 88.9	3.05 x 3.05	6.00 x 5.05	8.55 x 7.62	102
4 x 2 1/2	100 x 65	114.3 x 73.0	3.05 x 3.05	6.00 x 5.16	8.55 x 7.01	102
4 x 2	100 x 50	114.3 x 60.3	3.05 x 2.77	6.00 x 3.90	8.55 x 5.55	102
4 x 1 1/2	100 x 40	114.3 x 48.3	3.05 x 2.77	6.00 x 3.68	8.55 x 5.08	102
5 x 4	125 x 100	141.3 x 114.3	3.40 x 3.05	6.55 x 6.00	9.53 x 8.55	127

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BUTT WELDING REDUCERS-CONCETRIC & ECCENTRIC



NOMINAL PIPE SIZE		D X D1	NOMINAL PIPE SIZE			
IN	MM		T X T1 Sch. 10	T X T1 Sch. 40	T X T1 Sch. 80	H
5 x 3	125 x 80	141.3 x 88.9	3.40 x 3.05	6.55 x 5.05	9.52 x 7.06	127
5 x 2 1/2	125 x 65	141.3 x 73.0	3.40 x 3.05	6.55 x 5.16	9.52 x 7.01	127
5 x 2	125 x 50	141.3 x 60.3	3.40 x 2.77	6.55 x 3.90	9.52 x 5.56	127
6 x 5	150 x 125	168.3 x 141.3	3.40 x 3.40	7.11 x 6.55	10.97 x 9.52	140
6 x 4	150 x 100	168.3 x 114.3	3.40 x 3.05	7.11 x 6.02	10.97 x 8.55	140
6 x 3	150 x 80	168.3 x 88.9	3.40 x 3.05	7.11 x 5.50	10.97 x 7.62	140
6 x 2 1/2	150 x 65	168.3 x 73.0	3.40 x 2.77	7.11 x 5.16	10.97 x 7.01	140
8 x 6	200 x 150	219.1 x 168.3	3.76 x 3.40	8.18 x 7.11	12.70 x 10.97	152
8 x 5	200 x 125	219.1 x 141.3	3.76 x 3.40	8.18 x 6.55	12.70 x 9.53	152
8 x 4	200 x 100	219.1 x 114.3	3.76 x 3.05	8.18 x 6.02	12.70 x 8.55	152
10 x 8	250 x 200	273.0 x 219.1	4.19 x 3.76	9.27 x 8.18	15.09 x 12.70	178
10 x 6	250 x 150	273.0 x 168.3	4.19 x 3.40	9.27 x 7.11	15.09 x 10.97	178
10 x 5	250 x 125	273.0 x 141.3	4.19 x 3.40	9.27 x 6.55	15.09 x 9.52	178
10 x 4	250 x 100	273.0 x 114.3	4.19 x 3.05	9.27 x 6.02	15.09 x 8.56	178
12 x 10	300 x 250	323.9 x 273.0	4.57 x 4.19	10.31 x 9.27	17.50 x 15.09	203
12 x 8	300 x 200	323.9 x 219.1	4.57 x 3.76	10.31 x 8.18	17.50 x 12.07	203
12 x 6	300 x 150	323.9 x 168.3	4.57 x 3.40	10.31 x 7.11	17.50 x 10.97	203
12 x 5	300 x 125	323.9 x 141.3	4.57 x 3.40	10.31 x 6.55	17.50 x 9.52	203
14 x 12	350 x 300	355.6 x 323.9	4.78 x 4.57	11.13 x 10.31	19.10 x 17.50	330
14 x 10	350 x 250	355.6 x 273.0	4.78 x 4.19	11.13 x 9.27	19.10 x 15.09	330
14 x 8	350 x 200	355.6 x 219.1	4.78 x 3.76	11.13 x 8.18	19.10 x 12.70	330
14 x 6	350 x 150	355.6 x 168.3	4.78 x 3.40	11.13 x 7.11	19.10 x 10.97	330
16 x 14	400 x 350	406.4 x 355.6	4.78 x 4.78	12.70 x 11.13	21.40 x 19.10	356
16 x 12	400 x 300	406.4 x 323.9	4.78 x 4.57	12.70 x 10.31	21.40 x 17.50	356
16 x 10	400 x 250	406.4 x 273.0	4.78 x 4.19	12.70 x 9.27	21.40 x 15.09	356
16 x 8	400 x 200	406.4 x 219.1	4.78 x 3.76	12.70 x 8.18	21.40 x 12.70	356
16 x 6	400 x 150	406.4 x 168.3	4.78 x 3.40	12.70 x 7.11	21.40 x 10.97	356
18 x 16	450 x 400	457.2 x 406.4	4.78 x 4.78	14.27 x 12.70	23.83 x 21.40	381
18 x 14	450 x 350	457.2 x 355.6	4.78 x 4.78	14.27 x 11.13	23.83 x 19.10	381
18 x 12	450 x 300	457.2 x 323.9	4.78 x 4.78	14.27 x 10.31	23.83 x 17.50	381
18 x 10	450 x 250	457.2 x 273.0	4.78 x 4.19	14.27 x 9.27	23.83 x 15.09	381
18 x 8	450 x 200	457.2 x 219.1	4.78 x 3.76	14.27 x 8.18	23.83 x 12.70	381
20 x 18	500 x 450	508.0 x 457.2	5.54 x 4.78	15.09 x 14.27	26.19 x 23.83	508
20 x 16	500 x 400	508.0 x 406.4	5.54 x 4.78	15.09 x 12.70	26.19 x 21.40	508
20 x 14	500 x 350	508.0 x 355.6	5.54 x 4.78	15.09 x 11.13	26.19 x 19.10	508
20 x 12	500 x 300	508.0 x 323.9	5.54 x 4.57	15.09 x 10.31	26.19 x 17.40	508
20 x 10	500 x 250	508.0 x 273.0	5.54 x 4.19	15.09 x 9.27	26.19 x 15.09	508
20 x 8	500 x 200	508.0 x 219.1	5.54 x 3.76	15.09 x 8.20	26.19 x 12.70	508
24 x 20	600 x 500	610.0 x 508.0	6.35 x 5.54	17.48 x 15.09	30.96 x 26.19	508
24 x 18	600 x 450	610.0 x 457.2	6.35 x 4.78	17.118 x 14.27	30.96 x 23.83	508
24 x 16	600 x 400	610.0 x 406.4	6.35 x 4.78	17.48 x 12.70	30.96 x 21.40	508
24 x 14	600 x 350	610.0 x 355.6	6.35 x 4.78	17.48 x 11.13	30.96 x 19.05	508
24 x 12	600 x 300	610.0 x 323.9	6.35 x 4.57	17.48 x 10.31	30.96 x 17.48	508
24 x 10	600 x 250	610.0 x 273.0	6.35 x 4.19	17.48 x 9.27	30.96 x 15.09	508



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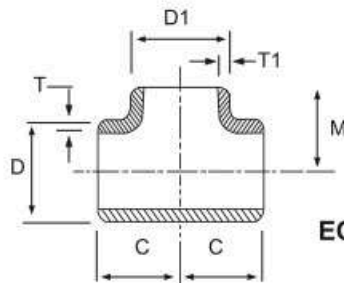
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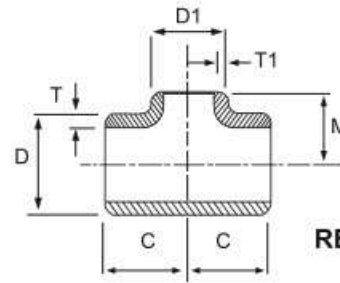
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BUTT WELDING TEES



EQUAL TEE



REDUCING TEE

*T1 = THICKNESS OF BRANCH WILL CORRESPOND TO ITS NB & Sch.

DIMENSIONS

Q = ± 1 upto 4" NB
= ± 2 for 5" to 8" NB

RUN NB		RUN NB		D		T / T1*			C ± 2	M ± 2
IN	MM	IN	MM	RUN	BRANCH	Sch. 10S	Sch. 40S	Sch. 80S		
1/2	15	1/2	15	21.3	21.3	-	2.77	3.73	25	25
3/4	20	3/4	20	26.7	26.7	2.11	2.87	3.91	28	28
3/4	20	1/2	15	26.7	21.3	-	-	-	28	25
1	25	1	25	33.4	33.4	2.77	3.38	4.55	38	38
1	25	3/4	20	33.4	26.7	-	-	-	38	38
1	25	1/2	15	33.4	21.3	-	-	-	38	38
1 1/4	32	1 1/4	32	42.2	42.2	2.77	3.56	4.85	48	48
1 1/4	32	1	25	42.2	33.4	-	-	-	48	48
1 1/4	32	3/4	20	42.2	26.7	-	-	-	48	48
1 1/4	32	1/2	15	42.2	21.3	-	-	-	48	48
1 1/2	40	1 1/2	40	48.3	48.3	2.77	3.68	5.08	57	57
1 1/2	40	1	25	48.3	33.4	-	-	-	57	57
1 1/2	40	3/4	20	48.3	26.7	-	-	-	57	57
1 1/2	40	1/2	15	48.3	21.3	-	-	-	57	57
2	50	2	50	60.3	60.3	2.77	3.91	5.55	64	64
2	50	1 1/2	40	60.3	42.3	-	-	-	64	60
2	50	1 1/4	32	60.3	42.3	-	-	-	64	57
2	50	1	25	60.3	33.4	-	-	-	64	51
2	50	3/4	20	60.3	26.7	-	-	-	64	44
2 1/2	65	2 1/2	65	73.0	73.0	3.05	5.16	7.01	76	76
2 1/2	65	2	50	73.0	60.3	-	-	-	76	70
2 1/2	65	1 1/2	40	73.0	48.3	-	-	-	76	67
2 1/2	65	1	25	73.0	33.4	-	-	-	76	57
3	80	3	80	88.9	88.9	3.05	5.50	7.62	86	86
3	80	2 1/2	65	88.9	73.0	-	-	-	86	83
3	80	2	50	88.9	60.3	-	-	-	86	76
3	80	1 1/2	40	88.9	48.3	-	-	-	86	73
4	100	4	100	114.3	114.3	3.05	6.02	8.55	105	105
4	100	3	80	114.3	89.9	-	-	-	105	98
4	100	2 1/2	65	114.3	73.0	-	-	-	105	95
4	100	2	50	114.3	60.3	-	-	-	105	89
4	100	1 1/2	40	114.3	48.3	-	-	-	105	86
5	125	5	125	141.3	141.3	3.40	6.55	9.52	124	124
5	125	4	100	141.3	114.3	-	-	-	124	117

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BUTT WELDING TEES

RUN NB		BRANCH NB		D	D1	T/T1*			C ± 2	M ± 2
IN	MM	IN	MM	RUN	BRANCH	Sch. 10 S	Sch. 40 S	Sch. 80 S		
5	125	3	80	141.3	88.90				124	111
5	125	2	50	141.3	60.30				124	105
6	150	6	150	168.3	168.30		7.11	10.97	143	143
6	150	5	125	168.3	141.30	3.40			143	137
6	150	4	100	168.3	114.30				143	130
6	150	3	80	168.3	88.90				143	124
6	150	2 1/2	65	168.3	73.00				143	121
8	200	8	200	219.1	219.10		8.18	12.70	178	178
8	200	6	150	219.1	168.30	3.76			178	168
8	200	5	125	219.1	141.30				178	162
8	200	4	100	219.1	114.30				178	156
10	250	10	250	273.0	273.00		9.27	15.09	216	216
10	250	8	200	273.0	219.10	4.19			216	203
10	250	6	150	273.0	168.30				216	194
10	250	5	125	273.0	141.30				216	191
10	250	4	100	273.0	114.30				216	184
12	300	12	300	323.9	323.90		10.31	17.48	254	254
12	300	10	250	323.9	273.00	4.57			254	241
12	300	8	200	323.9	219.10				254	229
12	300	6	150	323.9	168.30				254	219
12	300	5	125	323.9	141.30				254	216
14	350	14	350	355.6	355.60		11.13	19.05	279	279
14	350	12	300	355.6	323.90	4.78			279	270
14	350	10	250	355.6	273.00				279	257
14	350	8	200	355.6	219.10				279	248
14	350	6	150	355.6	168.30				279	238
16	400	16	400	406.4	406.40		12.70	21.40	305	305
16	400	14	350	406.4	355.60	4.78			305	305
16	400	12	300	406.4	323.90				305	295
16	400	10	250	406.4	273.00				350	283
16	400	8	200	406.4	219.10				305	273
16	400	6	150	406.4	168.30				305	264
18	450	18	450	457.2	457.20		14.27	23.80	343	343
18	450	16	400	457.2	406.40	4.78			343	330
18	450	14	350	457.2	355.60				343	330
18	450	12	300	457.2	323.90				343	321
18	450	10	250	457.2	273.00				343	308
18	450	8	200	457.2	219.10				343	298
20	500	20	500	508.0	508.00		15.09	26.20	381	381
20	500	18	450	508.0	457.20	5.54			381	343
20	500	16	400	508.0	406.40				381	330
20	500	14	350	508.0	355.60				381	330
20	500	12	300	508.0	323.90				381	321
20	500	10	250	508.0	273.00				381	308
20	500	8	200	508.0	219.10				381	298
24	600	24	600	610.0	610.00		17.48	31.00	432	432
24	600	20	500	610.0	508.00	6.35			432	381
24	600	18	450	610.0	457.20				432	343
24	600	16	400	610.0	406.40				432	330
24	600	14	350	610.0	355.60				432	330
24	600	12	300	610.0	323.90				432	321
21	600	10	250	610.0	273.00				432	308



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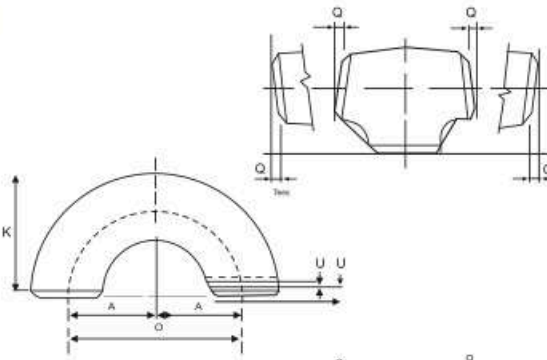
TOLERANCE AS PER B 16.9

ALL FITTINGS				90°/45° ELBOWS AND TEES	Reducers And Lap. Joint Stub Ends	CAPS	180° RETURNS			Lap. Joint Ends			
Nominal Pipe Size Inch	Outside (1) Diameter at Bevel	Inside (2) Diameter at Bevel	Wall (2) Thickness	Center to End Dimension	Overall Length	Overall Dimension	Center - to - Centre Dimension	Back-to Face Dimension	Alignment of Ends	Outside Diameter of Lap	Thick- ness of Lap	Fillent Radius of Lap	Outside Diameter
	D		T	A, B, C, M	H	E	O	K	U	G	T	R	Barrel
1/2" to 2 1/2"	± 1	± 0.8	Not less than 87.5% of nominal thickness	± 2	± 2	± 4	± 7	± 7	± 1	+0-1	Not less than nominal pipe wall thick- ness	+0-1	Refer Table Below
3" to 3 1/2"	± 1	± 1.6		± 2	± 2	± 4	± 7	± 7	± 1	+0-1		+0-1	
4"	+ 2 - 1	± 1.6		± 2	± 2	± 4	± 7	± 7	± 1	+0-1		+0-2	
5" to 6"	+ 3 - 1	± 1.6		± 2	± 2	± 7	± 7	± 7	± 1	+0-1		+0-2	
8"	± 2	± 1.6		± 2	± 2	± 7	± 7	± 7	± 1	+0-1		+0-2	
10"	+ 4 - 3	± 3.2		± 2	± 2	± 7	± 10	± 7	± 2	+0-2		+0-2	
12" to 18"	+ 4 - 3	± 3.2		± 3	± 3	± 7	± 10	± 7	± 2	+0-2		+0-2	
20" to 24"	+ 6 - 5	± 4.8		± 3	± 3	± 7	± 10	± 7	± 2	+0-2		+0-2	
26" to 30"	+ 7 - 5	± 4.8		± 3	± 3	± 10	-	-	-	-		-	
32" to 48"	+ 7 - 5	± 4.8		± 5	± 5	± 10	-	-	-	-		-	

1. Out of round is the sum of absolute values of plus and minus tolerance

2. The inside diameter at ends and the nominal wall thicknesses at ends are to be specified by the purchaser.

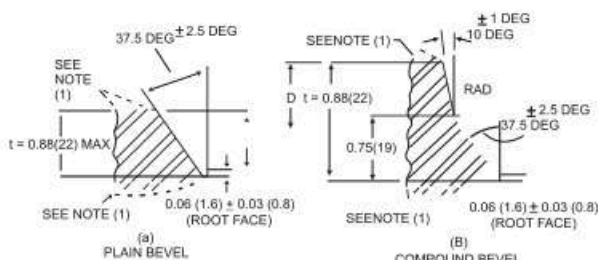
Nominal Pipe Size	Angularity Tol	
	Off Angle Q	Off Plane P
½ to 4	±1	+2
5 to 8	±2	±4
10 to 12	±3	±5
14 to 16	±3	±7
18 to 24	±4	±10
26 to 30	±5	±10
32 to 42	±5	±13
44 to 48	±5	±20



Nominal Pipe Size	Outside Dia of Barel	
	MIN	MAX
1/2"	20.55	22.76
3/4"	25.88	28.09
1"	32.61	34.95
1 1/4"	41.38	43.59
1 1/2"	47.47	49.94
2"	59.54	62.38
2 1/2"	72.24	75.34
3"	88.11	91.34
3 1/2"	100.81	104.04
4"	113.51	116.66
5"	140.51	144.35
6"	167.49	171.27
8"	218.29	222.07
10"	272.26	277.19
12"	323.06	327.99
14"	354.81	359.92
16"	405.61	410.97
18"	456.41	462.03
20"	507.21	514.10
22"	558.01	564.90
24"	608.81	615.70

Dimensions in parenthese are in millimeters
Others are in inches

FIGURE 1 - WELDING BEVELS
AND ROOT FACE



NOTE (1) : SEE 8.2 AND FIGURE 2 FOR TRANSACTION CONTOURS





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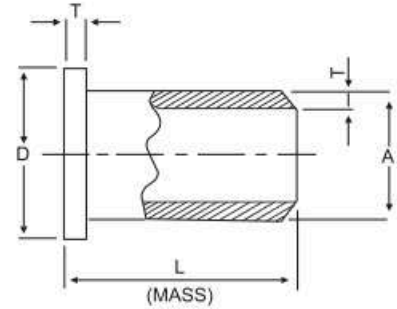
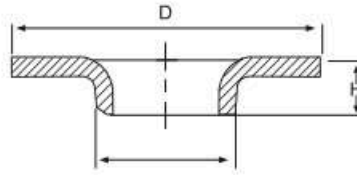
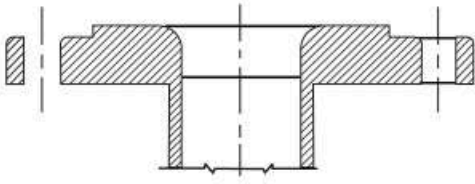
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PLUG & BUSHING



LONG STUB - ENDS

Nominal Bore (Inch)	1/2	3/4	01.00	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	5	6	8	10	12
Outside Dia 'D'	21.34	26.67	33.40	42.16	48.26	60.30	73.03	88.90	101.60	114.30	141.30	196.28	219.18	273.05	323.85
Material SH - 5S	01.65	01.65	01.65	01.65	01.65	01.65	02.11	02.11	02.77	02.77	02.77	02.77	02.77	03.40	03.96
Thickness SH - 10S	02.11	02.11	02.77	02.77	02.77	02.77	03.05	03.05	03.05	03.05	03.40	03.40	03.46	04.19	04.57
'T' SH - 40S	02.77	02.87	03.38	03.56	03.68	03.91	05.16	05.49	05.74	05.02	06.55	07.11	08.18	09.27	09.52
SH - 80S	03.73	03.91	04.55	04.85	05.08	05.54	07.01	07.62	08.07	08.56	09.52	10.91	12.70	12.70	12.70
Dimension 'D'	34.92	42.84	50.80	62.50	73.02	92.07	104.77	127.00	139.70	157.14	185.72	215.90	269.87	323.85	381.00
(Dia of Lap. face)															
Dimension 'L'(MSS)	50.80	50.50	50.80	50.80	50.80	63.50	63.50	63.50	76.20	76.20	76.20	88.90	101.60	127.00	152.40
Dimension 'R'(Red)	00.78	00.78	00.78	00.78	00.78	00.78	00.78	00.78	00.78	00.78	01.57	01.57	01.57	01.57	01.57

SHORT STUB - ENDS

Size	mm	10	15.0	20.0	25.0	32.0	40.0	50.0	65.0	80.0	100	125.0	150.0	200.0	250	300
DIN	D	40	45.0	58.0	68.0	78.0	88.0	102.0	122.0	138.0	158	188.0	212.0	268	320	370
STD	D	14	20.0	25.0	30.0	38.0	44.5	57.0	76.0	55.6	108	133.0	159.0	216.0	267	318
ASA	D	-	42.0	52.0	62.0	72.0	82.0	98.0	118.0	130.0	168	188.0	215.0	270	330	400
STD	D	-	21.3	26.7	33.5	42.2	48.3	60.4	73.1	88.9	114.3	141.3	168.4	219.2	273	324
OD	D	-	40.0	45.0	54.0	64.0	78.0	88.0	102.0	122.0	158	188.0	212.0	268.0	320	370
STD	D	-	21.0	25.0	31.0	37.5	44.0	57.0	70.0	82.0	107	132.0	158.0	209.0	260	310
Height	H	6	08.0	08.0	10.0	12.0	12.0	16.0	16.0	18.0	20	25.0	25.0	30.0	035	040



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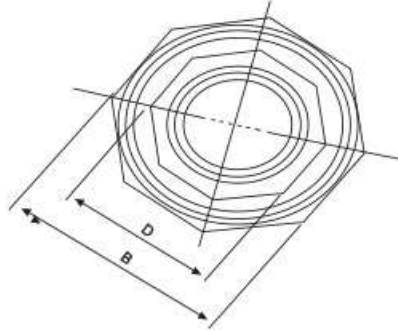
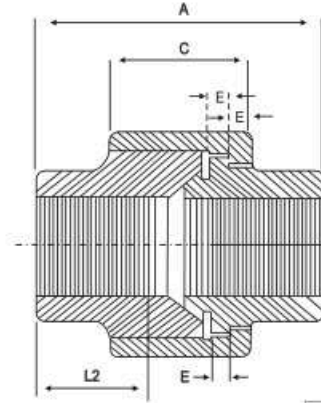
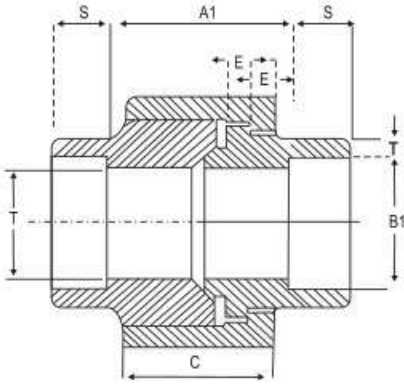
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SCREWD & SOCKET - WELD UNION DIMENSIONS



DIMENSIONS

ANSI B16.11 BS 3799 : 1974

Nominal Size		3000 lbs.									Socket Depth of socket (min) S	Wall thickness T
		End to End A	Width Union nut (min.) B	Height of Union nut (min.) C	Width A/F of ends (min.) D	Thickness of shoulder (min.) E	Distance Length of thread (min.) L2	Bore between bottoms of socket (min) A1	Bore diameter of sockets (min) B-1	Diameter of sockets (min) D*		
Inches	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
1/8	(6)	40	32	16	17	3.2	6.70	17	10.7	6.8	10	3.2
1/4	(8)	43	32	18	19	3.2	10.21	17	14.1	9.2	10	3.3
3/8	(10)	48	36	19	22	3.2	10.36	17	17.6	12.5	10	3.5
1/2	(15)	51	43	21	30	4.0	13.56	18	21.8	15.5	10	4.1
3/4	(20)	57	50	24	36	4.8	13.86	20	27.4	21.0	13	4.3
1	(25)	64	60	25	41	4.8	17.34	26	34.1	26.5	13	5.0
1 1/4	(32)	70	70	29	50	5.6	17.93	28	42.9	35.0	13	5.3
1 1/2	(40)	79	78	30	60	5.6	18.38	30	49.0	40.5	13	5.6
2	(50)	89	95	37	70	6.4	19.22	36	61.0	52.0	16	6.1
2 1/2	(65)	118	125	48	85	9.6	28.89	57	73.8	62.0	16	7.7
3	(80)	121	140	51	100	12.7	30.48	70	89.7	78.0	16	8.3

NOTE : Other external forms of nut ends are permissible provided the minimum dimensions shown in this table are maintained.

Bore diameter corresponds to schedule 40 pipe, subject to tolerance.

Outside diameter of pipe must be specified if dimensions are not in accordance with BS 1600



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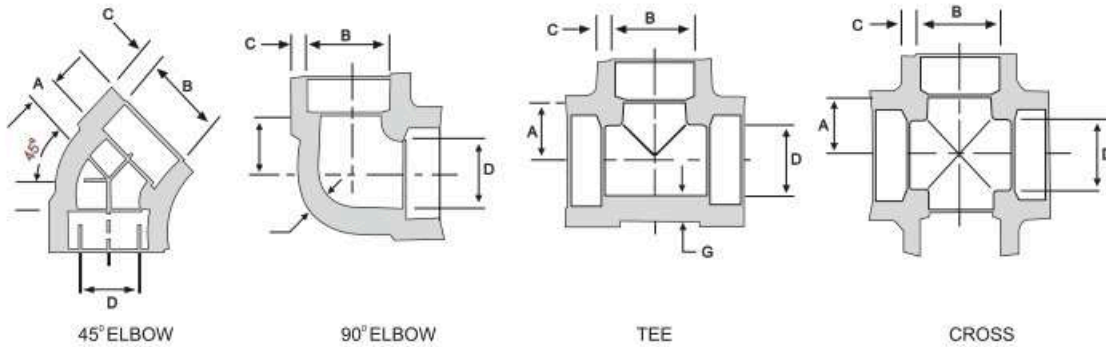
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Forged Fittings - Socket Weld Ends



DIMENSIONS

NOMINAL PIPE SIZE				3000 PSI RATING					6000 PSI RATING				
IN	MM	SOCKET BORE B	SOCKET DEPTH D	SOCKET THICKNESS		A	BODY BORE *	G	SOCKET THICKNESS		A	BODY BORE *	G
				AVERAGE	MIN				AVERAGE	MIN			
1/4	06	14.1	09.65	3.78	3.30	11.2	10.0	3.02	04.60	4.00	13.5	07.10	3.68
3/8	10	17.5	09.65	4.00	3.50	13.5	13.3	3.20	05.03	4.37	15.8	09.90	4.00
1/2	15	21.7	09.65	4.67	4.10	15.8	16.6	3.75	05.97	5.18	19.0	12.06	4.78
3/4	20	27.0	12.07	4.90	4.27	19.0	21.7	3.91	06.96	6.05	22.3	16.03	5.56
1	25	33.8	12.07	5.70	4.98	22.3	27.4	4.55	07.92	6.93	27.0	21.05	6.35
1 1/4	32	42.5	12.07	6.04	5.28	27.0	35.8	4.85	07.92	6.93	31.8	30.02	6.35
1 1/2	40	48.6	12.07	6.35	5.54	31.8	41.7	5.08	08.92	7.80	38.0	34.07	7.15
2	50	61.1	15.08	6.93	6.05	38.0	53.3	5.54	10.92	9.52	41.2	43.06	8.75
2 1/2	65	73.8	15.08	8.76	7.67	41.2	64.2	7.00					
3	80	89.8	15.08	9.50	8.30	57.2	-	7.68					

MANUFACTURING PROCESS & QUALITY CONTROL

These fittings are manufactured from drop forged solid forgings, exceeding the min. strength required as per specification. Finished forgings are checked tested for material properties on random sampling basis.

Concentricity, parallality, perpendicularity and accuracy of machined surfaces is assured by using properly designed jigs and fixtures. Threads are checked with std. thread gauges. Protective coating eliminates rusting/corrosion during storage.

TOLERANCES

DIMENSIONS	UPTO 2" NB	2 1/2" & 3" NB
* SOCKET BORE	+ 0.25 - 0.00	+ 0.38 - 0.00
* BODY BORE	+ 0.00 - 1.52	+ 0.00 - 3.00
A	1/4" NB ± 0.8 3/8" TO 3/4" NB ± 1.6 1" TO 2" NB ± 2.0	± 2.50

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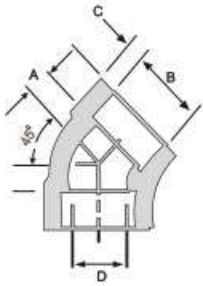
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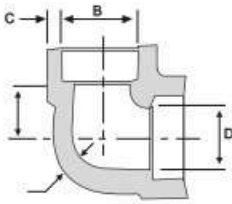
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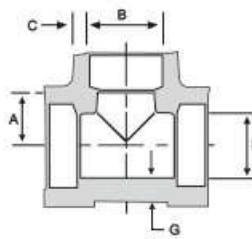
Forged Fittings - Screwed Ends



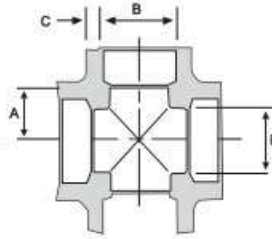
45° ELBOW



90° ELBOW



TEE



CROSS



DIMENSIONS

ANSI B 16.11

NOMINAL PIPE SIZE		3000 PSI RATING				6000 PSI RATING				3000 & 6000 PSI RATING	
IN	MM	A	C	H	G	A	C	H	G	L2	B
1/4	06	25	19	025	3.3	028	22	033	06.6	10.2	08.1
3/8	10	28	22	033	3.5	033	25	038	07.0	10.4	09.1
1/2	15	33	25	038	4.1	038	28	046	08.2	13.6	11.0
3/4	20	38	28	046	4.3	045	33	056	08.5	13.9	12.7
1	25	45	33	056	5.0	051	38	062	10.0	17.3	14.7
1 1/4	32	51	38	062	5.3	061	43	075	10.6	18.0	17.0
1 1/2	40	61	43	075	5.6	064	44	084	11.1	18.4	17.8
2	50	64	44	084	7.1	083	52	102	12.11	19.2	19.0
2 1/2	65	83	52	102	7.7	095	64	121	15.3	28.9	23.6
3	80	95	64	121	8.8	106	79	146	16.6	30.5	25.9

SPECIFICATION

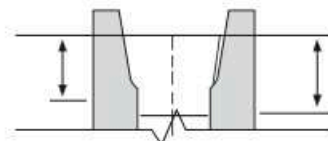
1. OVERALL DIMENSIONS
2. SOCKET DIMENSIONS
3. THREAD DIMENSIONS

ANSI - B 16.11

ANSI - B 16.11

ANSI - B 2.1

NPT THREAD GAUGE DETAILS



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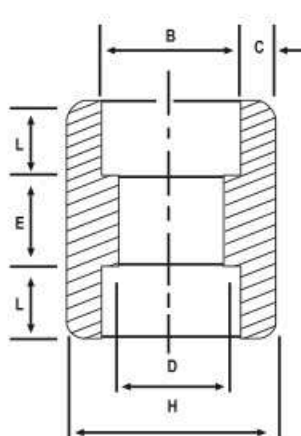
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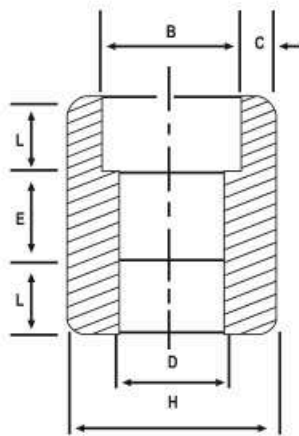
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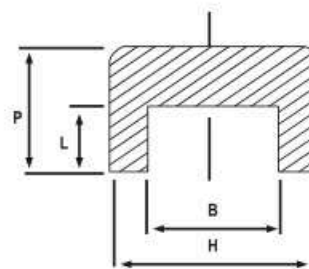
FORGED COUPLINGS & CAP - SOCKET WELD ENDS



FULL COUPLING



HALF COUPLING



CAP

DIMENSIONS

ANSI B 16.11

NOMINAL PIPE SIZE		SOCKET BORE	SOCKET LENGTH	SOCKET DEPTH	3000 PSI RATING					6000 PSI RATING			
IN	MM	B	L	E	F	D	C	H	P	D	C	H	P
1/4	06	14.1	09.65	06.04	15.8	10.0	3.03	022.0	16.0	07.1	4.00	23.5	19.0
3/8	10	17.5	09.65	06.04	17.5	13.3	3.05	026.0	16.5	09.9	4.37	28.0	20.5
1/2	15	21.7	09.65	09.65	22.3	16.6	4.01	031.0	17.5	12.6	5.18	34.0	21.5
3/4	20	27.0	12.07	09.65	24.0	21.7	4.27	037.0	22.0	16.3	6.05	41.0	26.0
1	25	33.8	12.07	12.07	28.5	27.4	4.98	045.5	25.0	21.0	6.93	50.0	28.5
1 1/4	32	42.5	12.07	12.07	30.0	35.8	5.28	055.0	26.0	30.2	6.93	58.5	31.0
1 1/2	40	48.6	12.07	12.07	32.0	41.7	5.54	062.0	28.0	34.7	7.08	66.5	33.0
2	50	61.1	15.08	19.00	41.0	53.3	6.05	075.0	34.0	43.6	9.52	83.0	37.0
2 1/2	65	73.8	15.08	19.00	43.0	64.2	7.67	092.0					
3	80	89.8	15.08	19.00	45.0	79.5	8.03	109.0					

TOLERANCES

NPS	E	F	B	D
UPTO 1/4" NPS	+ 1.5	+ 0.8		
3/8" NPS 3/4 NPS	+3	+ 1.5	+0.25 -0.00	+ 0.0 - 1.5
1" NPS - 2 NPS	+4	+2		
2 1/2" NPS & ABOVE	+5	+2.5	+0.38 -0.0	+0.0 - 3.0



AMBIKA METAL INDUSTRIES

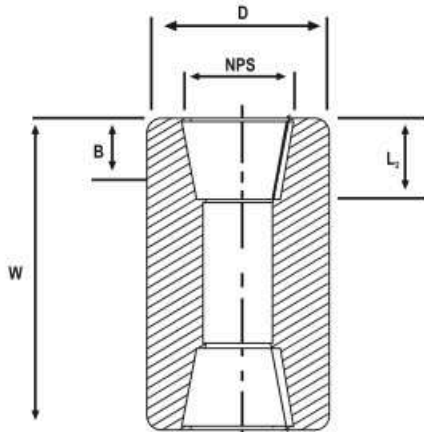
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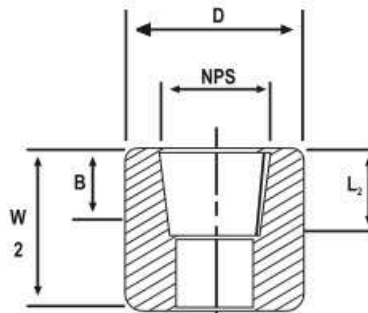
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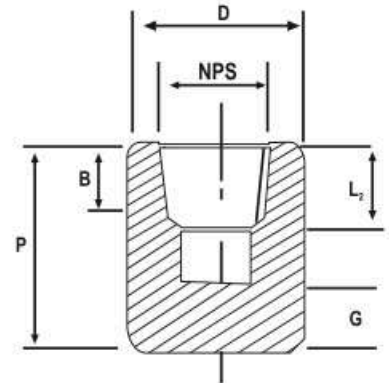
FORGED COUPLINGS & CAP - SCREWS ENDS



FULL COUPLING



HALF COUPLING



CAP

DIMENSIONS

ANSI B 16.11

NOMINAL PIPE SIZE		3000 PSI RATING				6000 PSI RATING				3000 & 6000 PSI RATING	
IN	MM	D	W	P	G	D	W	P	G	B	L2
1/4	6	19.0	35.0	25.0	4.8	25.0	35.0	27	6.4	8.1	10.2
3/8	10	22.5	38.0	25.0	4.8	32.0	38.0	27	6.4	9.1	10.4
1/2	15	28.5	48.0	32.0	6.4	38.0	48.0	33	8.0	11.0	10.4
3/4	20	35.0	51.0	36.5	6.4	45.0	51.0	38	8.0	12.7	13.9
1	25	45.0	60.5	41.0	9.6	57.0	60.5	43	11.0	14.7	17.3
1 1/4	32	57.0	66.5	45.0	9.6	63.0	66.5	46	11.0	17.0	18.0
1 1/2	40	63.0	79.0	45.0	11.0	76.0	79.0	48	12.7	17.8	18.4
2	50	76.0	85.0	48.0	12.7	92.0	85.0	51	15.8	19.0	19.2
2 1/2	65	92.2	92.0	60.5	15.8	108	92.0	64	19.0	23.6	28.9
3	80	108	108	65.0	19.0	127	108	68	22.3	25.9	30.5

SPECIFICATION :

1. DIMENSIONS
2. THREAD

ANSI - B 16.11

ANSI - B 2.1



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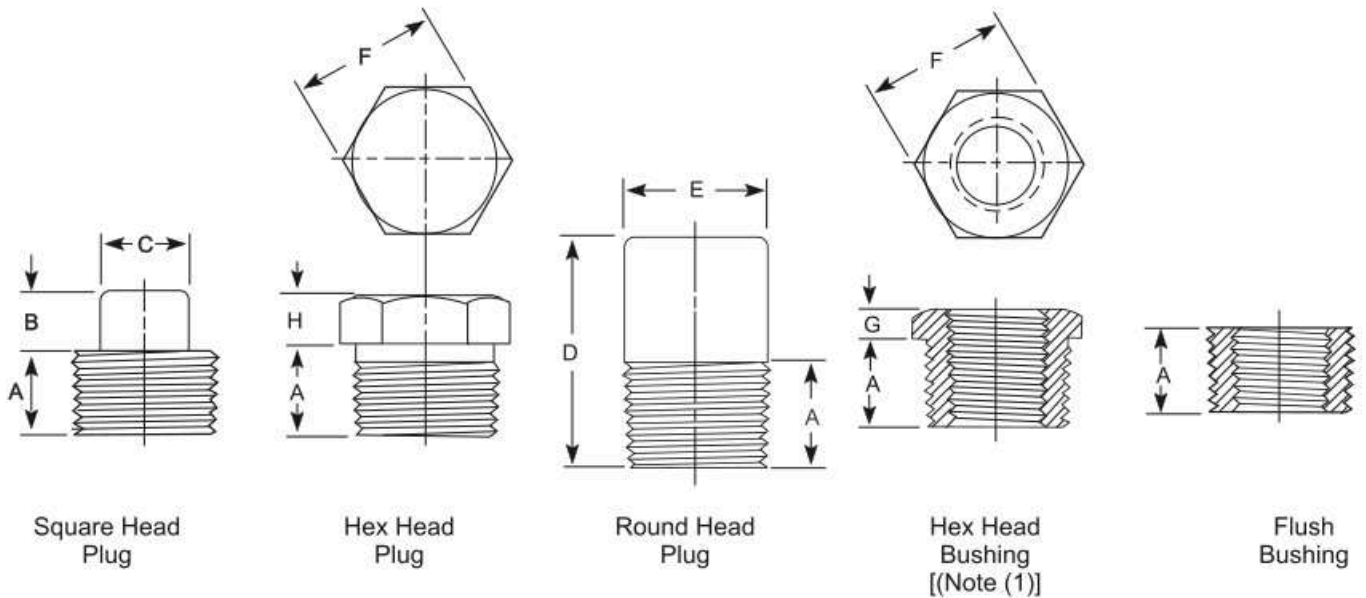
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AMBIKA METAL INDUSTRIES

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FORGED PLUGS & BUSHINGS



DIMENSIONS

ANSI B 16.11

NOMINAL PIPE SIZE		A	SQ. HEADED PLUGS		ROUND HEADED PLUGS		HEX. HEAD PLUGS & BUSHINGS		
IN	MM		B	C	D	E	F	H	G
1/4	06	11.0	06.0	10.0	41	14.0	16.0	6.5	3.0
3/8	10	13.0	08.0	11.0	41	18.0	18.0	08.0	04.0
1/2	15	14.0	10.0	14.0	45	21.0	22.0	08.0	05.0
3/4	20	16.0	11.0	16.0	45	27.0	27.0	09.5	06.0
1	25	19.0	13.0	21.0	51	33.0	36.0	09.5	06.0
1 1/4	32	21.0	14.0	24.0	51	43.0	45.0	14.0	07.0
1 1/2	40	21.0	16.0	28.0	51	48.0	50.0	16.0	08.0
2	50	22.0	17.5	33.0	64	60.0	65.0	17.5	09.0
2 1/2	65	27.0	19.0	38.0	70	73.0	75.0	19.0	10.0
3	80	28.0	21.0	43.0	70	89.0	90.0	20.5	10.0
4	100	32.0	25.0	64.0	76	114.0	115.0	32.0	13.0



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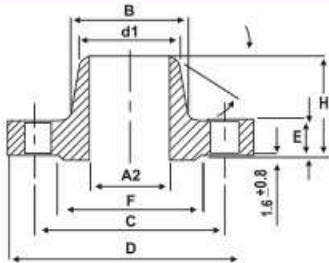
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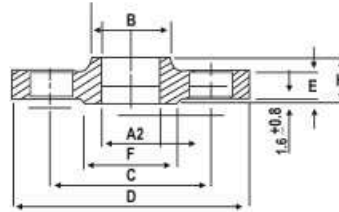
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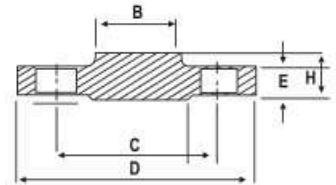
FORGED FLANGES



WELDING - NECK



SLIP- ON



BLIND

150 lbs	Common sizes to 150 lbs flanges							WELDING-NECK 150 lbs		SLIP-ON 150 lbs		LAP - JOINT 150 lbs		
Nominal Bore	Diam. D	E Thick	Diam. F	Diam. B	DRILLING			Diam d1	(1) H Height	(1) H Height	Diam A	(1) H Height	Diam A	R Radius
					No bore	Holes Diam	Diam C							
1/2	89.0	11.0	34.9	30.0	4	16	60.3	21.3	47.6	16.0	22.4	16.0	22.9	3.1
3/4	98.4	12.7	42.9	38.0	4	16	69.9	26.7	52.4	16.0	27.7	16.0	28.2	3.1
1	108.0	14.3	50.8	49.0	4	16	79.4	33.4	55.6	17.5	34.5	17.5	35.1	3.1
1 1/4	117.5	15.9	63.5	59.0	4	16	88.9	42.2	57.2	20.5	43.2	20.5	43.7	4.7
1 1/2	127.0	17.5	73.0	65.0	4	16	98.4	48.3	61.9	22.0	49.5	22.0	50.0	6.3
2	152.4	19.0	92.1	78.0	4	19	120.6	60.3	63.5	25.4	62.0	25.5	62.5	7.9
2 1/2	178.0	22.3	104.8	90.5	4	19	139.7	73.0	70.0	28.6	74.7	28.5	75.5	7.9
3	190.5	23.8	127.0	108.0	4	19	152.4	88.9	70.0	30.0	90.7	30.0	91.5	9.5
3 1/2	216.0	23.8	139.7	122.0	8	19	177.8	101.6	71.5	32.0	103.4	32.0	104.2	9.5
4	228.5	23.8	157.2	135.0	8	19	190.5	114.3	76.2	33.5	116.1	33.5	116.9	11.1
5	254.0	23.8	185.7	163.5	8	23	215.9	141.3	88.9	36.5	143.8	36.5	144.5	11.1
6	279.5	25.4	215.9	192.0	8	23	241.3	168.3	88.9	39.5	170.7	39.5	171.5	12.7
8	343.0	28.6	269.9	246.0	8	23	298.5	219.1	102.0	44.5	221.5	44.5	222.3	12.7
10	406.5	30.2	323.9	305.0	12	25	362.0	273.0	102.0	49.0	276.4	49.0	277.4	12.7
12	482.6	31.8	381.0	365.0	12	25	431.8	323.9	114.3	55.5	327.2	55.5	328.2	12.7
14	533.5	35.0	412.8	400.0	12	29	476.3	355.6	127.0	57.0	359.2	79.4	360.2	12.7
16	597.0	36.5	469.9	457.0	16	29	539.8	406.4	127.0	63.5	410.5	87.3	411.2	12.7
18	635.0	39.7	533.4	505.0	16	32	577.9	457.2	139.7	68.5	461.8	96.8	462.3	12.7
20	698.5	42.9	584.2	559.0	20	32	635.0	508.0	144.5	73.0	513.1	103.2	514.4	12.7
24	813.0	47.6	692.2	663.5	20	35	749.3	609.6	152.4	82.5	616.0	111.1	616.0	12.7

150 lbs	Common sizes to 150 lbs flanges							WELDING-NECK 150 lbs		SLIP-ON 150 lbs		LAP - JOINT 150 lbs		
Nominal Bore	Diam. D	E Thick	Diam. F	Diam. B	DRILLING			Diam d1	(1) H Height	(1) H Height	Diam A	(1) H Height	Diam A	R Radius
					No bore	Holes Diam	Diam C							
1/2	95.0	14.3	34.9	38	4	16.0	67.0	21.3	52.5	22.0	22.4	22.2	22.9	3.1
3/4	117.5	16.0	42.9	48	4	19.0	83.0	26.7	57.0	25.5	27.7	25.4	28.2	3.1
1	124.0	17.5	50.8	54	4	19.0	89.0	33.4	62.0	27.0	34.5	27.0	35.1	3.1
1 1/4	133.5	19.0	63.5	63	4	19.0	98.5	42.2	65.0	27.0	43.5	27.0	43.7	4.7
1 1/2	156.0	20.5	73.0	70	4	22.2	114.5	48.3	68.5	30.0	49.5	30.2	50.0	6.3
2	165.0	22.0	92.1	84	8	19.0	127.0	60.3	70.0	33.5	62.0	33.3	62.5	7.9
2 1/2	190.5	25.5	104.8	100	8	22.2	149.0	73.0	76.0	38.0	74.7	38.1	75.4	7.9
3	209.5	28.5	127.0	117	8	22.2	168.5	88.9	79.5	43.0	90.7	42.9	91.5	9.5
3 1/2	229.0	30.0	139.7	133	8	22.2	184.0	101.6	81.0	44.5	103.4	44.5	104.2	9.5
4	254.0	31.5	157.2	146	8	22.2	200.0	114.3	85.5	47.5	116.1	47.6	116.9	11.1
5	279.0	35.0	185.7	178	8	22.2	235.0	141.3	98.5	50.5	143.5	50.8	144.5	11.1
6	317.5	36.5	215.9	206	12	22.2	270.0	168.3	98.5	52.5	170.7	52.4	171.5	12.7
8	381.0	41.5	269.9	260	12	25.4	330.0	219.1	111.0	62.0	221.5	61.9	222.3	12.7
10	444.5	47.5	323.9	321	16	29.0	387.5	273.0	117.5	66.5	276.4	95.3	277.4	12.7
12	520.5	51.0	381.0	375	16	32.0	451.0	323.9	130.0	73.0	327.2	101.6	328.2	12.7
14	584.0	54.0	412.8	425	20	32.0	514.5	355.6	143.0	76.0	359.2	111.1	360.2	12.7
16	647.7	57.0	469.9	483	20	35.0	571.5	406.4	146.0	82.5	410.5	120.7	411.2	12.7



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AMBIKA METAL INDUSTRIES

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FORGED FLANGES

600 lbs	Common sizes to 600 lbs flanges							WELDING-NECK 600 lbs		SLIP-ON 600 lbs		LAP - JOINT 600 lbs		
Nominal Bore	Diam D	E Thick	Diam F	Diam B	DRILLING			Diam d1	(1) H Hight	(1) H Hight	Diam A	(1) H Hight	Diam A	R Radius
					No bore	Holes Diam	Diam C							
1/2	95.0	14.3	34.9	38	4	16	67.0	21.3	52.4	22.2	22.4	22.2	22.9	3.1
3/4	117.5	15.9	42.9	48	4	19	83.0	26.7	57.1	25.4	27.7	25.4	28.2	3.5
1	124.0	17.5	50.8	54	4	19	89.0	33.4	61.9	27.0	34.5	27.0	35.1	3.1
1 1/4	133.5	20.6	63.5	63	4	19	98.5	42.2	66.7	28.6	43.2	28.6	43.7	4.7
1 1/2	155.6	22.2	73.0	70	4	22	114.5	48.3	69.8	31.8	49.5	31.8	50.0	6.3
2	165.5	25.4	92.1	84	8	19	127.0	60.3	73.0	36.5	62.0	36.5	62.5	7.9
2 1/2	190.5	28.5	104.8	100	8	22	149.9	73.0	79.4	41.3	74.4	41.3	75.4	7.9
3	209.5	31.8	127.0	117	8	22	168.5	88.9	82.5	46.0	90.7	46.0	91.5	9.5
3 1/2	229.0	34.9	139.7	133	8	25	184.0	101.6	85.7	49.0	103.4	49.2	104.2	9.5
4	273.0	38.1	157.2	152	8	25	216.0	114.3	114.3	60.3	143.8	60.3	144.5	11.1
5	330.0	44.5	185.7	189	8	29	267.0	141.3	114.3	60.3	143.8	60.3	144.5	11.1
6	355.5	47.6	215.9	222	12	29	292.0	168.3	117.5	66.7	170.7	66.7	171.5	12.7
8	419.0	55.6	269.9	273	12	32	349.0	219.1	133.4	76.2	221.5	76.2	222.3	12.7
10	508.0	63.5	323.9	343	16	35	432.0	273.0	152.4	85.7	276.4	111.1	277.4	12.7
12	559.0	66.7	381.0	400	20	35	489.0	323.9	155.6	92.1	327.2	117.5	328.2	12.7
14	603.0	69.8	412.8	432	20	38	527.0	355.6	165.1	93.7	359.2	127.0	360.2	12.7
16	686.0	76.2	469.9	495	20	42	603.5	406.4	177.8	106.4	410.5	139.7	411.2	12.7
18	743.0	82.6	533.4	546	20	45	654.0	457.2	184.2	177.5	461.8	152.4	462.3	12.7
20	813.0	88.9	584.2	610	24	45	724.0	508.0	190.5	127.0	513.1	165.1	514.4	12.7
24	940.0	101.6	692.2	718	24	51	838.0	609.6	203.2	139.7	616.0	184.2	616.0	12.7

1500 lbs DN NB	Common sizes to 1500 lbs flanges							WELDING-NECK 1500 lbs		SLIP-ON 1500 lbs		LAP - JOINT 1500 lbs		
DN NB								d1	H	H	A	H	A	R
1/2	121.0	22.2	34.9	38.0	4	22.2	82.5	21.3	60.3	31.7	22.4	31.8	22.9	3.1
3/4	130.0	25.4	42.9	44.5	4	22.2	89.0	26.7	69.9	34.9	27.7	34.9	28.2	3.1
1	149.0	28.6	50.8	52.4	4	25.4	101.5	33.4	73.0	41.3	34.5	41.3	35.1	3.1
1 1/4	159.0	28.6	63.5	63.5	4	25.4	111.0	42.2	73.0	41.3	43.2	41.3	43.7	4.7
1 1/2	178.0	31.7	73.0	70.0	4	29.0	124.0	48.3	82.5	44.4	49.5	44.5	50.0	6.3
2	216.0	38.1	92.1	105.0	8	25.4	165.0	60.3	101.6	57.1	62.0	57.2	62.5	7.9
2 1/2	244.5	41.3	104.8	124.0	8	29.0	190.5	73.0	104.8	63.5	74.7	63.5	75.4	7.9
3	266.5	47.6	127.0	133.5	8	32.0	203.0	88.9	117.5	73.0	90.7	73.0	91.5	9.5
4	311.0	54.0	157.0	162.0	8	35.0	241.5	114.3	123.8	90.5	116.1	90.5	116.9	11.1
5	374.5	73.0	185.7	197.0	8	42.0	292.0	141.3	155.6	104.8	143.8	104.8	144.5	11.1
6	394.0	82.5	215.9	229.0	12	38.0	317.5	168.3	171.5	119.1	170.7	119.1	171.5	12.7

2500 lbs DN NB	Common sizes to 2500 lbs flanges							WELDING-NECK 2500 lbs		SLIP-ON 2500 lbs		LAP-JOINT 2500 lbs		
DN NB								d1	H	H	A	H	A	R
1/2	133.5	30.2	34.9	43.0	4	22.2	89.0	21.3	73.0	39.7	22.4	39.7	22.9	3.1
3/4	140.0	31.8	42.9	51.0	4	22.2	95.0	26.7	79.4	42.9	27.7	42.9	28.2	3.1
1	159.0	34.9	50.8	57.0	4	25.4	108.0	33.4	88.9	47.6	34.5	47.6	35.1	3.1
1 1/4	184.0	38.1	63.5	73.0	4	29.0	130.0	42.2	95.3	52.3	43.2	52.4	43.7	4.7
1 1/2	203.0	44.5	73.0	79.5	4	32.0	146.0	48.3	111.1	60.3	49.5	60.3	50.0	6.3
2	235.0	50.8	92.1	95.0	8	29.0	171.5	60.3	127.0	69.9	62.0	69.9	62.5	7.9
2 1/2	267	57.2	104.8	114.5	8	32	197	73	142.9	79.4	74.7	79.4	75.4	7.9
3	305	66.7	127.0	133.5	8	35	228.5	88.9	168.3	92.1	90.7	92.1	91.5	9.5
4	356	76.2	157.2	165.0	8	42	273	114.3	190.5	108	116.1	108.0	116.9	11.1
5	419	92.1	185.7	203.0	8	48	324	141.3	228.6	130.2	143.8	130.2	144.5	11.1
6	483	108	215.9	235.0	8	54	368.5	168.3	273.0	152.4	170.7	152.4	171.5	12.7



AMBIKA METAL INDUSTRIES

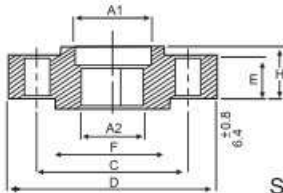
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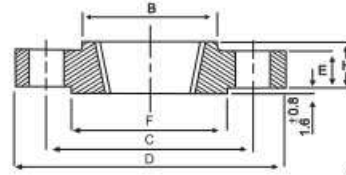
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FORGED FLANGES

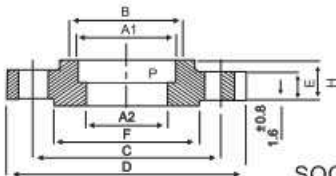


SOCKET-WELD

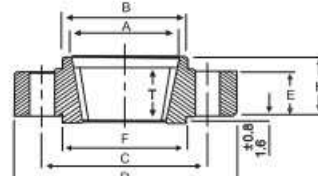


SCREWED

150 lbs						300 lbs							
Nominal Bore	SOCKET-WELDING			SCREWED		SOCKET-WELDING			SCREWED				Nominal bore in inches
	(2) H Height	Diam A1	P Depth	(R) H Height	(1) H Weight	(2) H	Diam. A1	Depth P	(2) H Height	Diam A1	T Height	Kg Weight	
1/2	16	22.4	9.5	16	0.500	22	22.4	9.5	22	23.6	15.9	0.700	1/2
3/4	16	27.7	11.1	16	0.700	25.5	27.7	11.1	25.5	29	15.9	1.130	3/4
1	17.5	34.5	15.0	17.5	0.900	27	34.5	12.7	27	35.8	17.5	1.360	1
1 1/4	20.5	43.2	14.3	20.5	1.200	27	43.2	14.3	27	44.5	20.6	2.050	1 1/4
1 1/2	22	49.5	15.30	22	1.400	30	49.5	15.9	30	50.6	22.2	2.950	1 1/2
2	25.5	62.0	17.5	25.5	2.300	33.5	62	17.5	33.5	63.5	28.6	3.200	2
2 1/2	28.5	74.7	19.1	28.5	3.600	38	74.7	19.1	38	76.2	31.8	4.530	2 1/2
3	30	90.7	20.7	30	4.500	43	90.7	20.7	43	92.2	31.8	6.350	3
3 1/2	32	103.4	22.2	32	5.400	44.5	103.4	22.2	44.5	104.9	36.5	7.300	3 1/2
4	33.5	116.1	23.8	33.5	5.900				47.5	117.6	38.5	10.870	4



SOCKET-WELD



SCREWED

Nominal Bore	SOCKET-WELDING			SCREWED		SOCKET-WELDING			SCREWED				Nominal bore in inches
	H (2)	A1	P	H (2)	A	T	H (2)	A1	P	H (2)	A	T	
1/2	22.2	22.2	9.5	22.2	23.6	15.9	31.8	22.4	9.5	31.8	23.6	22.2	1/2
3/4	25.4	27.7	11.1	25.4	29	15.9	34.9	27.7	11.1	34.9	29	25.4	3/4
1	27.0	34.5	12.7	27.0	35.8	17.5	41.3	34.5	12.7	41.3	35.8	28.6	1
1 1/4	28.6	43.2	14.3	28.6	44.5	20.6	41.3	43.2	14.3	41.3	44.5	30.2	1 1/4
1 1/2	31.8	49.5	15.9	31.8	50.6	22.2	44.5	49.5	15.9	44.5	50.6	31.8	1 1/2
2	36.5	62.0	17.5	36.5	63.5	28.6	57.2	62.0	17.5	57.2	63.5	38.1	2
2 1/2	41.3	74.7	19.1	41.3	76.2	31.8	63.5	74.7	19.7	63.5	76.2	47.6	2 1/2
3	46.0	90.7	20.7	46.0	92.2	34.9				73.0	92.2	50.8	3
3 1/2				49.2	104.9	39.7				90.5	117.6	57.2	3 1/2
4				54.0	117.6	41.3				104.8	114.5	63.5	4

- 2) 150 lbs & 300 lbs flanges. Raised face of 1/16" included in H & E
600 up to 2500 flanges - R.F. of 1/4" is not included in H & E

NB : B-D-C-F-E see pages before (slip-on)



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TOLERANCE AS PER B 16.5

The tolerance tabulated below, apply to all ANSI Flanges, APF Large Diameter flanges, and the flanged ends of welding necks. Certain other tolerances apply to Oriface Flanges and those are as covered by American Gas Association recommendations.

THREAD, SLIP-ON, LAP JOINT AND BLIND FLANGES

Inside Diameter	Threaded	Within limits of boring gauge
	10" and smaller	+0.76-0
	12" and larger	+1.52-0
Outside Diameter	24" or less	± 0.0625
	over 24"	± 0.125
Diameter of Counterbore	Same as for Inside Diameter	
Diameter of contact Face	1.58mm Raised Face 150# & 300#	± 0.76
	6.35mm Raised Face above 300#	± 0.50
	Tongue & Groove or male & female	
Outside Dia. of Hub	5" and smaller	+2.28-0.76
	6" and larger	+4.06-0.76
Drilling	Bolt circle	± 1.52
	Bolt Hole spacing	± 0.76
Eccentricity Bolt circle & Facing(with respect to bore)	2 1/2" and smaller	± 0.76
	3" and larger	± 1.52
Thickness	18" and smaller	+3.04-0
	20" and larger	+4.82-0

Except where indicated, the tolerance are those established by ANSI B16.5 and the variations are maximum. In actual practice manufacturing and inspection procedures control dimensions so closely that variations are normally much less than those listed as permitted

WELDING NECK FLANGES

Inside Diameter	10" and smaller	0.76
	12" to 18"	1.52
	20" and larger	+3.04-1.52
Outside Diameter	24" or less	0.0625
	over 24"	0.125
Diameter of contact Face	1.58mm Raised Face 150# & 300#	0.76
	6.35mm Raised Face above 300#	± 0.50
	Tongue & Groove or male & female	
Diameter of Hub at point of welding	5" and larger	+2.28-0.76
	6" or larger	+4.06-0.76
Drilling	Bolt circle	1.52
	Bolt Hole spacing	0.76
Eccentricity Bolt circle & Facing(with respect to bore)	2 1/2" and smaller	0.76
	3" and larger	1.52
Length thru. Hub	4" and smaller	1.52
	5" to 10"	+1.52-3.04
	12" and larger	+3.04-4.57
Thickness	18" and smaller	+3.04-0
	20" and larger	+4.82-0



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TABLE FOR STANDARD SIZE OF STAINLESS STEEL TUBE

MM	INCHES	0.71 mm	1.00 mm	1.22 mm	1.50 mm	1.63 mm	2.03 mm	2.05 mm	2.77 mm	3.25 mm
6.320	1/4"	0.100	0.133	0.156	0.186	-	-	-	-	-
10.000	3/8"	0.165	0.255	0.268	0.319	0.341	0.405	0.488	0.501	0.549
12.700	1/2"	0.213	0.293	0.350	0.420	0.451	0.542	0.666	0.688	0.768
15.875	5/8"	0.269	0.372	0.442	0.539	0.581	0.703	0.877	0.911	1.027
19.050	3/4"	0.325	0.451	0.544	0.658	0.710	0.864	1.087	1.126	1.285
23.000	-	-	0.552	0.667	0.810	0.875	1.069	1.354	1.407	1.612
25.400	1"	-	0.610	0.738	0.897	0.969	1.187	1.503	1.569	1.801
31.750	1 1/4"	-	-	0.932	1.135	1.228	1.510	1.930	2.009	2.318
38.100	1 1/2"	-	-	1.126	1.375	1.487	1.832	2.351	3.449	2.834
45.000	-	-	-	1.341	1.639	1.775	2.191	2.819	2.938	3.408
50.800	2"	-	-	1.514	1.850	2.006	2.478	3.193	3.330	3.868
63.500	2 1/2"	-	-	-	2.327	2.524	3.123	4.036	4.210	4.910
76.200	3"	-	-	-	-	2.789	3.453	4.467	4.661	5.934
89.900	3 1/2"	-	-	-	-	3.560	4.413	5.720	5.971	6.967
101.600	4"	-	-	-	-	4.078	5.509	6.563	6.852	8.000

STAINLESS STEEL WELDED / SEAMLESS PIPES

NOMINAL BORE		OUTSIDE DIAMETER	SCHEDULE 5S		SCHEDULE 10S		SCHEDULE 40S		SCHEDULE 80S	
MM	INCHES	MM	WALL MM	KG/MTR	WALL MM	KG/MTR	WALL MM	KG/MTR	WALL MM	KG/MTR
6	1/4"	13.72	-	-	1.65	0.491	2.24	0.634	3.02	0.797
10	3/8"	17.15	-	-	1.65	0.631	2.31	0.845	3.20	1.101
15	1/2"	21.34	1.65	0.801	2.11	1.001	2.77	1.269	3.73	1.620
20	3/4"	26.67	1.65	1.018	2.11	1.278	2.87	1.685	3.91	2.195
25	1"	33.40	1.65	1.292	2.77	2.092	3.38	2.502	4.55	3.237
32	1 1/4"	42.16	1.65	1.648	2.77	2.691	3.56	3.389	4.85	4.463
40	1 1/2"	48.26	1.65	1.897	2.77	3.108	3.68	4.046	5.08	5.410
50	2"	60.33	1.65	2.388	2.77	3.932	3.91	5.440	5.54	7.486
65	2 1/2"	73.03	2.11	3.690	3.05	5.264	5.16	8.637	7.01	11.413
80	3"	88.90	2.11	4.516	3.05	6.457	5.49	11.293	7.62	15.274
90	3 1/2"	101.60	2.11	5.177	3.05	7.413	5.74	13.570	8.08	18.635
100	4"	114.30	2.11	5.838	3.05	8.368	6.02	16.075	8.56	22.322
125	5"	141.30	2.77	9.463	3.40	11.563	6.55	21.767	9.52	30.939
150	6"	168.28	2.77	11.306	3.40	13.825	7.11	28.260	10.97	42.558
200	8"	219.08	2.77	14.777	3.76	19.966	8.18	42.545	12.70	64.638
250	10"	273.05	3.40	22.610	4.19	27.782	9.27	60.303	12.70	81.542
300	12"	323.85	3.96	31.240	4.57	35.984	9.52	73.798	12.70	97.453
350	14"	355.60	3.96	34.341	4.78	41.355	9.52	81.252	-	-
400	16"	406.40	4.19	41.561	4.78	47.344	9.52	93.178	-	-
450	18"	457.20	4.19	46.810	4.78	53.332	9.52	105.105	-	-
500	20"	508.00	4.78	59.321	5.54	68.648	9.52	117.032	-	-
550	22"	558.80	4.78	65.309	5.54	75.589	9.52	128.959	-	-
600	24"	609.60	5.54	82.530	6.35	94.469	9.52	140.885	-	-

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ASTM SPECIFICATION FOR TUBING & PIPING

ASTM SPECIFICATION	OUTSIDE DIAMETER VARIATION IN MM			ALLOWABLE WALL THICKNESS VARIATIONS	TESTING
ASTMA213 Seamless Ferritic and austenitic Tube	Nominal Diameter	Over	Under	%	
	Under 25.4	1016	1016	+ -20%	Refer to ASTM -A 450
	25.4-38.1 inclu	1524	1524	-0	
	38.1-50.8 exclu	2032	2032	+ -20%	
				-0	
	50.8-63.5 exclu	.257	.257	+ -22%	
			-0		
	63.5-76.2 exclu	.3048	.3048	-0	
	76.2-101.6 inclu	.381	.381	-0	
ASTMA-249 Welded Heat Exchange and condenser tubes 76.2-101.6 inclu	Under 25.4	1016	1016	+ -10%	Refer to ASTM -A 450
	25.4-38.1 inclu	1524	1524	+ -10%	
	38.1-50.8 inclu	2032	2032	+ -10%	
	50.8-63.5 inclu	354	254	+ -10%	
	63.5-76.2	inclu	304	+ -10%	
	76.2-101.6 inclu	381	381	+ -10%	
ASTM A-269 seamless and Welded austenitic S.S. Tube	up to 12.7 mm	0.130	0.13	+ -15%	Refer to ASTM -A 450
	12.7 to 38.1 mm	0.13	0.13	+ -10%	
	38.1 to 88.9	0.25	0.25	+ -10%	
	88.9 to 139.7 mm	0.76	0.76	+ -10%	
	139.7 to 203.2 mm	0.76	0.76	+ -10%	
ASTMA-312 seamless and Welded austenitic Pipe	13.72-48.26 MM	+0.40	+0.79	-12.5%	Refer to ASTM -A 530
	60.33-114.3	-0.73	-0.79		
	168.28-219.08	+1.59	0.79		
	273.05-373.85	+2.38	+0.79		
ASTMA-358 Welded austenitic pipe	219.08-750mm	+ -0.5%		-0.3mm	Refer to ASTM -A 530
ASTMa-409 Welded austenitic pipe	355.6-750mm	+ -0+2% To + -0.4%		-0.46mm	Refer to ASTM -A 530



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SUMMARY OF THE MAIN ASTM STANDARD GENERALLY USED FOR PIPING

ASTM	Grade	Chemical requirement percent (%)										Mechanical requirements			
		C Max	MN max	P max	S max	Si max	Ni	Cr	Mo	Cu	Others	Tensile Strength mini-Mpa	Yield Strength mini-Mpa	Elong. Mini %	Impact test a C F
A53	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	205	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	240	29.5	
A106	A	0.25	0.27-0.93	0.035	0.035	0.10 min	0.40 max	0.40 max	0.15 max	0.40 max	0.08 max	330	205	L35-T25	
	B	0.30	0.29-1.06	0.035	0.035	0.10 min	0.40 max	0.40 max	0.15 max	0.40 max	0.08 max	415	240	L30-T16.5	
	C	0.35	0.29-1.06	0.035	0.035	0.10 min	0.40 max	0.40 max	0.15 max	0.40 max	0.08 max	485	275	L30-T16.5	
A312	TP 304	0.08	2.00	0.040	0.030	0.75	8.00-11.0	18.0-20.0				515	205	L35-T25	
	TP 304L	0.035	2.00	0.040	0.030	0.75	8.00-13.0	18.0-20.0				485	170	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	205	L35-T25	
	TP 316	0.08	2.00	0.040	0.030	0.75	11.0-14.0	16.0-18.0	2.00-3.00			515	205	L35-T25	
	TP316L	0.035	2.00	0.040	0.030	0.75	10.0-15.0	16.0-18.0	2.00-3.00			485	170	L35-T35	
	TP317L	0.035	2.00	0.040	0.030	0.75	11.0-15.0	18.0-20.0	3.00-4.00			515	205	L35-T25	
	TP321	0.08	2.00	0.040	0.030	0.75	9.00-13.0	17.0-20.0			Ti>5xC<0.70 Cb + Ta > 10xC < 1.10	515	205	L35-T25	
	TP 347	0.08	2.00	0.040	0.030	0.75	9.00-13.0	17.0-20.0				515	205	L35-T25	
A333	3	0.19	0.31-0.64	0.025	0.025	0.18-0.37	3.18-3.82					450	240	L30-T20	-100 -150
	4	0.12	0.50-1.05	0.025	0.025	0.08-0.37	0.47-0.98	0.44-1.01		0.40-0.75	Al 0.40-0.30	415	240	L30-T16.5	-100 -150
	6	0.30	0.29-1.06	0.025	0.025	0.10 min						415	240	L30-T16.5	-45 -50
	7	0.19	0.90	0.025	0.025	0.13-0.32	2.03-2.57					450	240	L30-T22	-75 -100
	8	0.13	0.90	0.025	0.025	0.13-0.32	8.40-9.60					690	515	L22	-195 -320
A335	9	0.20	0.40-1.06	0.025	0.025		1.60-2.24			0.75-1.25		435	315	L28	-75 -100
	P1	0.10-0.20	0.30-0.80	0.025	0.025	0.10-0.05			0.44-0.65			380	205	L30-T20	
	P2	0.10-0.20	0.30-0.61	0.25	0.025	0.10-0.30		0.50-0.81	0.44-0.65			380	205	L30-T20	
	P5	0.15	0.30-0.60	0.025	0.025	0.50		4.00-6.00	0.45-0.65			415	205	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	205	L30-T20	
	P11	0.05-0.15	0.30-0.60	0.025	0.025	0.50-1.00		1.00-1.50	0.44-0.65			415	205	L30-T20	
	P12	0.05-0.15	0.30-0.61	0.025	0.025	0.50		0.80-1.25	0.44-0.65			415	220	L30-T20	
	P15	0.05-0.15	0.30-0.60	0.025	0.025	1.15-1.65		-	0.44-0.65			415	205	L30-T20	
	P21	0.05-0.15	0.30-0.60	0.025	0.025	0.50		2.65-3.35	0.80-1.06			415	205	L30-T20	
A358	P22	0.05-0.15	0.30-0.60	0.025	0.025	0.50		1.90-2.60	0.87-1.13			415	205	L30-T20	
	P91	0.08-0.12	0.30-0.60	0.025	0.025	0.20-0.50	0.40 max	8.00-9.50	0.85-1.05			585	415	L20	
	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 Class 2 : Double welded no Radiography Class 3 : Single welded full Radiography Class 4 : Single welded full Radiography root pass without addition of filler Class 5 : Double Welded spot Radiography			
	TP310	0.08	2.00	0.045	0.030	0.50	19.0-22.0	24.0-26.0	-						
	TP316	0.08	2.00	0.045	0.030	0.75	10.0-14.0	16.0-18.0	2.0-3.0						
	TP316L	0.08	2.00	0.045	0.030	0.75	10.0-14.0	16.0-18.0	2.0-3.0						
	TP317L	0.030	2.00	0.045	0.030	0.75	11.0-15.0	18.0-20.0	3.0-4.0						
	TP321	0.08	2.00	0.045	0.030	0.75	9.0-12.0	17.0-19.0	-			Class 5 : Double Welded spot Radiography			
	TP347	0.08	2.00	0.045	0.030	0.75	9.0-13.0	17.0-19.0	-						

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

L - Longitudinal
T - Transverse



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SUMMARY OF THE MAIN ASTM STANDARDS GENERALLY USED SHEETS / PLATES

ASTM	Grade	Chemical requirements percent (%)										Mechanical requirements			
		C	Mn	P	S	Si	Ni	Cr	Mo	Cu	Others	Tensile Strength mini-MPa	Yield Strength mini-MPa	Elong mini %	Hardness Brinell Rockwell
A240	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				515	205	40	217 95
A387 Class 1 Class 2	347	0.08	2.00	0.045	0.030	0.75	9.00-13.0	17.0-19.0				515	205	40	201 92
	2	0.05-0.21	0.55-0.80	0.035	0.040	0.15-0.40		0.50-0.80	0.45-0.60			Class 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			380 485	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	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	240 275	22	max217HB max95HRB
	12	0.04-0.17	0.40-0.65	0.035	0.04	0.15-0.40		0.80-1.15	0.45-0.60			380 450	205 310	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			380 450	205 310	22	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
	55	0.22	0.90	0.035	0.04	0.15-0.40						380-515	205	27	
A 515	60	0.27	0.90	0.035	0.04	0.15-0.40						415-550	220	25	
	65	0.31	0.90	0.035	0.04	0.15-0.40						450-585	240	23	
	70	0.33	1.20	0.035	0.04	0.15-0.40						485-620	260	21	
	55	0.20	0.60-1.20	0.035	0.04	0.15-0.40						380-515	205	27	
A 516	60	0.23	0.85-1.20	0.035	0.04	0.15-0.40						415-550	202	25	
	65	0.26	0.85-1.20	0.035	0.04	0.15-0.40						450-585	240	21	
	70	0.28	0.85-1.20	0.035	0.04	0.15-0.40						485-620	260	21	
	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	22	
A 537	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	22	

IS-2002-62 STEEL PLATES FOR BOILERS

Designation	Chemical Composition					Tensile Test		Elongation	
	C	Si	P	S	max	Tensile Strength Mpa	Yield Strength Mpa	Test Piece	% min
IS 2002-1	0.18	0.10-0.35	0.040	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	0.050	412-491	491	5.650So 40So	25 29
IS 2002-2B	0.22	0.10-0.35	0.050	0.050	0.050	510-608	491	5.650So 40So	20 24

IS-2062-92 STEEL FOR GENERAL STRUCTURAL PURPOSES

Grade	Designation	% Chemical Composition					Tensile strength (Min) Kg/mm ²	Yield Strength (Min) Mpa		% Elong gauge length (Min) 5.650So	Bend Test	Std test Piece Charpy V Notch Impact Energy, Joule min
		C	MN	S	P	Si		<20 mm	>20 mm			
A	FE410 WA	0.23	1.5	0.050	0.050	-	41.8	250	240	23	3t	-
B	FE410 WB	0.22	1.5	0.045	0.045	0.40	41.8	250	230	23	t<25mm	2t for 27 3t for t>25mm
C	FE410 WC	0.20	1.5	0.040	0.040	0.40	41.8	250	230	23	2t	27

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



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TO VARIOUS STANDARDS APPROXIMATELY

Type	Romania		Soviet Union	Sweden
	Spec. No. STAS	Type		
-	3583	10AzMNC170	-	-
OH17B4G8	-	-	12Kh17G9AN4	-
-	-	-	-	-
IH 18N9	3583	10NC 180	12Kh 18N 19	2330/2331
-	-	-	-	-
-	-	-	-	2346
-	-	-	-	2346
OH 18N9	3583	7NC 180	08Kh 18N 10	2332/2333
OOH 18N10	-	-	-	2352
H20N 13S2	3583	155NC200	20Kh20N14S2	-
-	-	-	-	-
H25N20S2	3583	155NC250	20Kh25N20S2	-
H23N18	-	-	-	2361
-	6855	T 12MSMoNC 10	-	2347/2343
-	-	-	-	-
OOH17N 14M2	-	-	-	2353
-	-	-	-	-
-	-	-	03Ch 17N 14M2	-
OH 18N9T	3583	7TNC 180	1Kh 18N 10T	2337
OH 18NICT	-	-	-	-
OH 18N 12Nb	3583	7NbNC 180	08Kh 18N 12B	2338
-	3583	12C 130	12Kh 13	2302
OH13J	-	-	-	-
-	3583	12C 130	12Kh 13	2302
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
2H 13	3583	20C 130	20Kh 13	2302
-	-	-	-	-
H17	3583	10C170	12Kh 17	2320
-	-	-	-	-
-	-	-	-	-
2H 17N2	-	-	20Kh 17N2	2321
-	-	-	-	2322
-	-	-	-	-
-	-	-	-	-

COMPARISON OF STAINLESS STEEL

USA		West Germany		Great Britain		Poland	
AISI	SAE	Standard No.	DIN	BS 970 : Part 4, 1970	En Steel replaced	Spec. No. PN	
201	-	-	-	-	-	-	-
202	-	1.4371	X8CrMnNi 189	284S16	-	86020	-
301	30301	1.4310	X12CrNi 177	301S21	-	-	-
302	30302	1.4300	X12CrNi 188	302S25	58A	86020	-
302B	30302B	1.4300	-	-	-	-	-
303	30303	1.4305	X12CrNiS 188	303S21	58M	-	-
303Se	30303Se	1.4305	X12CrNiS 188	303S41	58M	-	-
304	30304	1.4301	X5CrNi 189	304S15	58E	86020	-
304L	30304L	1.4306	X2CrNi 189	304S15	-	86020	-
309	30309	1.4828	X15CrNiSi 2012	309S24	-	86022	-
309S	30309S	-	-	-	-	-	-
310	30310	1.4841	X15CrNiSi 2520	310S24	-	86022	-
310S	303 10S	1.4845	X5CrNi 2521	-	-	86022	-
316	303 16	1.4401	Z5CrNiMo 1810	316S16	58J	-	-
316Ti	-	1.4571	-	-	-	-	-
316L	303 16L	1.4404	X2CrNiMo 1810	316S 12	-	86020	-
317	303 17	1.4449	X5CrNiMo 1713	317S 16	-	-	-
317L	-	1.4435	X2CrNiMo 1812	317S 12	-	-	-
321	30321	1.4541	X10CrNiTi 189	321S 20	-	-	-
-	-	-	-	321S 12	58B&58C	86020	-
347	30347	1.4550	X10CrNiNb 189	347S 17	58F&58G	86020	-
403	5.1403	1.4024	X10Cr 13	403S 17	-	-	-
405	5.1405	1.4002	X7CrAl 113	-	-	86020	-
410	51410	1.4006	X10Cr 13	410S 21	56A	-	-
414	51414	-	-	-	-	-	-
416	51416	1.4024	X12CrS13	416S 21	56AM	-	-
416Se	51416Se	-	-	416S 41	56AM	-	-
420	51420	1.4021	X20Cr13	420S 37	56C	86020	-
420F	51420F	-	-	-	-	-	-
430	51430	1.4016	X8Cr17	430S 15	60	86020	-
430F	51430F	1.4104	X12CrMoS17	-	-	-	-
430FSe	51430FSe	1.4104	X12CrMoS17	-	-	-	-
431	51431	1.4057	X12CrNi17	431S 29	57	86020	-
436	51446	-	-	-	-	-	-
440B	-	1.4112	X90CrMo V18	-	-	-	-
446	-	1.4762	-	-	-	-	-



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Nominal Pipe Size Inches	OD D (mm)	10	20	30	STD	40	60	XS	80	100	120	140	160	XXS	5S	10S	40S	80S
1/8	10.30	1.24 0.28		1.45 0.32	1.73 0.37	1.73 0.37		2.41 0.47	2.41 0.47							1.24 0.28	1.73 0.37	2.41 0.48
1/4	13.70	1.65 0.49		1.85 0.54	2.24 0.63	2.24 0.63		3.02 0.80	3.02 0.80							1.65 0.51	2.24 0.64	3.02 0.82
3/8	17.10	1.65 0.63		1.85 0.70	2.31 0.84	2.31 0.84		3.20 1.10	3.20 1.10							1.65 0.64	2.31 0.86	3.20 1.12
1/2	21.30	2.11 1.00		2.41 1.12	2.77 1.27	2.77 1.27		3.73 1.62	3.73 1.62				4.78 1.95	7.47 2.55	1.65 0.82	2.11 1.01	2.77 1.30	3.73 1.65
3/4	26.70	2.11 1.28		2.41 1.44	2.87 1.69	2.87 1.69		3.91 2.20	3.91 2.20				5.66 2.90	7.82 3.64	1.65 1.04	2.11 1.31	2.87 1.71	3.91 2.24
1	33.40	2.77 2.09		2.90 2.18	3.38 2.50	3.38 2.50		4.55 3.24	4.55 3.24				6.35 4.24	9.09 5.45	1.65 1.33	2.77 2.13	3.38 2.55	4.55 3.29
1 1/4	42.20	2.77 2.69		2.97 2.87	3.56 3.39	3.56 3.39		4.85 4.47	4.85 4.47				6.35 5.61	9.7 7.77	1.65 1.68	2.77 2.76	3.56 3.46	4.85 4.56
1 1/2	48.30	2.77 3.11		3.18 3.53	3.68 4.05	3.68 4.05		5.08 5.41	5.08 5.41				7.14 7.25	10.2 9.55	1.65 1.95	2.77 3.17	3.68 4.13	5.08 5.51
2	60.30	2.77 3.93		3.18 4.48	3.91 5.44	3.91 5.44		5.54 7.48	5.54 7.48				8.74 11.11	11.07 13.44	1.65 2.44	2.77 4.01	3.91 5.54	5.54 7.63
2 1/2	73.00	3.05 5.26		4.78 8.04	5.16 8.63	5.16 8.63		7.01 11.41	7.01 11.41				9.53 14.92	14.02 20.39	2.11 3.77	3.05 5.36	5.16 8.81	7.01 11.64
3	88.90	3.05 6.46		4.78 9.92	5.49 11.29	5.49 11.29		7.62 15.27	7.62 15.27				11.13 21.35	15.24 27.68	2.11 4.60	3.05 6.59	5.49 11.52	7.62 15.59
3 1/2	101.60	3.05 7.41		4.78 11.41	5.74 13.57	5.74 13.57		8.08 18.64	8.08 18.64						2.11 5.29	3.05 7.55	5.74 13.82	8.08 19.01
4	114.30	3.05 8.37		4.78 12.91	6.02 16.08	6.02 16.08		8.56 22.32	8.56 22.32		11.13 28.32		13.49 33.54	17.12 41.03	2.11 5.96	3.05 8.52	6.02 16.40	8.56 22.77
5	141.30	3.4 11.6			6.55 21.77	6.55 21.77		9.53 30.97	9.53 30.97		12.70 40.28		15.88 49.12	19.05 57.43	2.77 9.67	3.40 11.82	6.55 22.20	9.53 31.59
6	168.30	3.4 13.8			7.11 28.26	7.11 28.26		10.57 42.56	10.57 42.56		14.27 54.21		18.26 67.56	21.95 79.22	2.77 11.55	3.40 14.13	7.11 28.83	10.57 43.42
8	219.30	3.76 20	6.35 33.32	7.04 36.82	8.18 42.55	8.18 42.55	10.31 53.09	12.70 64.64	12.70 64.64	15.09 75.92	18.26 90.44	20.62 100.93	23.01 111.27	22.23 107.93	2.77 15.09	3.76 20.37	8.18 43.39	12.70 65.95
10	273.10	4.19 27.8	6.35 41.76	7.80 51.01	9.27 60.29	9.27 60.29	12.70 81.53	12.70 81.53	15.09 95.98	18.26 114.71	21.44 133.01	25.40 155.10	28.58 172.27	25.40 155.10	3.40 23.08	4.19 28.34	9.27 61.52	12.70 83.19
12	323.90	4.57 36	6.35 49.71	8.38 65.19	9.53 73.86	9.53 73.86	10.31 79.71	12.70 108.93	12.70 97.44	15.09 132.05	18.26 159.87	21.44 186.92	25.40 208.08	25.40 238.69	3.96 31.89	4.57 36.73	9.53 75.32	12.70 99.43
14	355.60	4.78 41.4	7.92 67.91	9.53 81.33	9.53 81.33	11.13 94.55	15.09 126.72	12.70 107.40	12.70 158.11	15.09 194.98	19.05 224.56	23.83 253.58	27.79 281.72	31.75 35.71	3.96 36.06	4.78 44.14	9.53 82.95	12.70 109.55
16	406.40	4.78 47.3	7.92 77.83	9.53 93.27	9.53 93.27	12.70 123.31	16.66 160.13	12.70 123.31	12.70 203.54	16.66 245.57	21.44 286.66	26.19 333.21	30.96 365.38	36.53 40.49	4.19 42.41	4.78 48.26	9.53 95.14	12.70 125.78
18	457.00	4.78 53.3	7.92 87.71	11.13 122.38	9.53 105.17	14.27 155.81	19.05 205.75	12.70 139.16	12.70 254.57	23.88 309.64	29.36 363.58	34.93 408.28	39.67 459.39	45.24 50.01	4.19 47.77	4.78 54.36	9.53 107.27	12.70 141.94
20	508.00	5.54 68.6	9.53 117.15	12.70 155.13	9.53 117.15	15.09 183.43	20.62 247.84	12.70 155.13	12.70 311.19	26.19 381.55	32.54 441.52	38.10 508.15	44.45 564.85	50.01 56.48	4.78 60.45	5.54 70.00	9.53 119.49	12.70 158.23
22	559.00	5.54 76.5	9.53 129.14	12.70 171.10	9.53 129.14		22.23 294.27	12.70 171.10	12.70 373.85	34.93 451.45	41.28 600.67	47.63 600.67	53.98 672.30		4.78 66.57	5.54 77.06		
24	610.00	6.35 94.53	9.53 141.12	14.27 209.65	9.53 141.12	17.48 255.43	24.61 355.28	12.70 187.07	12.70 442.11	30.95 547.74	38.89 720.19	52.37 720.19	59.54 808.27		5.54 84.16	6.35 96.37		12.70 190.81
26	660.00	7.92 127.36	12.70 203.74		9.53 152.88			12.70 202.74										
28	711.00	7.92 137.32	12.70 218.71	15.88 272.23	9.53 164.86			12.70 218.71										
30	762.00	7.92 147.29	12.70 234.68	15.88 292.20	9.53 176.85			12.70 234.68							6.35 120.72	7.92 150.36		
32	813.00	7.92 157.25	12.70 250.65	15.88 312.17	9.53 188.83	17.48 342.94		12.70 250.65										
34	864.00	7.92 167.21	12.70 266.63	15.88 332.14	9.53 200.83	17.48 364.92		12.70 266.63										
36	914.00	7.92 176.97	12.70 282.29	15.88 351.73	9.53 212.57	19.05 420.45		12.70 282.29										
38	965.00				9.53 224.56			12.70 298.25										
40	1016.00				9.53 236.54			12.70 314.23										
42	1067.00				9.53 248.53			12.70 330.21										
44	1118.00				9.53 260.52			12.70 346.18										
46	1168.00				9.53 272.27			12.70 361.84										
48	1219.00				9.53 284.25			12.70 377.81										



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

CHEMICAL ANALYSIS									MECHANICAL PROPERTIES			SPECIFIC REQUIREMENT
									TENSILE STRENGTH	YIELD TRESS	ELONGA-TION	
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	-	-	-	330MIN	205MIN	36	Cr Mo Cu Ni Ya 40 15 40 40 08 Five elements not to exceed 1%
ASTM A 53/B	AW	0.30MAX	1.20MAX	0.050	0.060	-	-	-	415MIN	240MIN	29/5	
ASTM A 106/A	AW	0.25MAX	0.27-0.93	0.035	0.025	0.10MIN	0.40MAX	0.15MAX	330MIN	205MIN	35/2	
ASTM A 106/B	AW	0.35MAX	0.29-1.06	0.035	0.025	0.10MIN	0.40MAX	0.15MAX	415 MIN	240MIN	30/22	
ASTM A 106/C	AW	0.35MAX	0.29-1.06	0.035	0.025	0.10MIN	0.40MAX	0.15MAX	485MIN	275MIN	30/22	
ASTM A 179	MW	0.06-0.18	0.27-0.63	0.035	0.035	-	-	-	325MIN	180MIN	35.0	Hardness 72 HRB Max
ASTM A 214	MW	0.18MAX	0.27-0.63	0.035	0.035	-	-	-	385MIN	180MIN	35.0	Hardness 72 HRB Max
ASTM A 192	MW	0.06-0.18	0.27-0.63	0.035	0.035	0.25MAX	-	-	325MIN	180MIN	35.0	Hardness 77 HRB Max
ASTM A 209/T1	MW	0.10-0.20	0.30-0.80	0.025	0.025	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	0.025	0.025	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	0.025	0.025	0.10MIN	-	0.44-0.65	415MIN	220MIN	30/22	Hardness 77 HRB Max
ASTM A 210/A-1	MW	0.27max	0.93max	0.048	0.035	0.10MIN	-	-	415MIN	255MIN	30/22	Hardness 79 HRB Max
ASTM A 210/C	MW	0.35MAX	0.29-1.06	0.048	0.035	0.10MIN	-	-	485MIN	275MIN	30/22	Hardness 89 HRB Max
ASTM A 213/T2	MW	0.10/0.20	0.30-0.61	0.025	0.025	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	0.025	0.025	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	0.025	0.025	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	0.025	0.025	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	0.025	0.025	0.50MAX	1.90-2.60	0.87-1.13	415MIN	205MIN	30/22	Hardness 85 HRB Max
ASTM A 333/3	AW	0.19MAX	0.31-1.64	0.025	0.025	0.18-0.37	Ni	3.18-3.82	380MIN	205MIN	35/25	IMPACT AS -50F FOR 40X10/18/1490 MRB -50F40X10/18/14 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 334/3	AW	0.19MAX	0.31-1.64	0.025	0.025	0.18-0.37	Ni	3.18-3.82	380MIN	205MIN	35/28	
ASTM A 334/6	MW	0.30MAX	0.9-1.06	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	-	0.40-0.65	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	0.40-0.65	380MIN	205MIN	30/22	
ASTM A 335/P5	AW	0.15MAX	0.30-0.60	0.025	0.025	0.50-1.00	4.00-6.00	0.40-0.65	415MIN	205MIN	30/22	
ASTM A 335/P11	AW	0.15MAX	0.30-0.61	0.025	0.025	0.50MAX	0.80-1.25	0.40-0.65	415MIN	205MIN	50/22	
ASTM A 335/P12	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	
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/3059/245		0.12-0.18	0.90-1.20	0.035	0.035	0.10-0.35	-	-	441-560	245MIN	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	0.40-0.60	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	249MIN	22	
ASTM A 199/T5	MW	0.50-0.15	0.30-0.60	0.025	0.025	0.50MAX	4.00-6.00	0.45-0.65	415MIN	170MIN	30/22	HARDNESS 85 HRB MAX HARDNESS 85 HRB MAX HARDNESS 85 HRB MAX HARDNESS 85 HRB MAX HARDNESS 85 HRB MAX HARDNESS 85 HRB MAX HARDNESS 85 HRB MAX HARDNESS 85 HRB MAX HARDNESS 85 HRB MAX HARDNESS 85 HRB MAX HARDNESS 85 HRB MAX HARDNESS 85 HRB MAX HARDNESS 85 HRB MAX HARDNESS 85 HRB MAX HARDNESS 85 HRB MAX
ASTM A 199/T11	MW	0.05-0.15	0.30-0.60	0.025	0.025	0.50-1.00	1.00-1.50	0.44-0.65	415MIN	170MIN	30/22	
ASTM A 199/T22	MW	0.05-0.15	0.30-0.60	0.025	0.025	0.50MAX	1.90-2.60	0.87-1.13	415MIN	170MIN	30/22	
ASTM A 199/T4	MW	0.15MAX	0.30-0.60	0.025	0.025	0.50-1.00	2.15-2.85	0.44-0.65	415MIN	170MIN	30/22	
ASTM A 199/T7	MW	0.15MAX	0.30-0.60	0.025	0.025	0.50-1.00	6.00-8.00	0.45-0.65	415MIN	170MIN	30/22	
ASTM A 200/T5	MW	0.15MAX	0.30-0.60	0.025	0.025	0.50-1.00	4.00-6.00	0.45-0.65	415MIN	170MIN	30/22	
ASTM A 200/T11	MW	0.05-0.15	0.30-0.60	0.025	0.025	0.50-1.00	1.00-1.50	0.44-0.65	415MIN	170MIN	30/22	
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	
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	
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	
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	
ASTM A335/P9	MW	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 A178A	MW	0.06-0.18	0.30-0.60	0.035	0.035	-	-	-	325MIN	160MIN	35	
ASTM A178C	MW	0.35MAX	0.27-0.63	0.035	0.035	-	-	-	415MIN	170MIN	30	
ASTM A178B	MW	0.27MAX	0.80 MAX	0.030	0.015	0.10MIN	-	-	485MIN	275MIN	30	

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AMBIKA METAL INDUSTRIES

AN ISO 9001:2015 CERTIFIED CO.

REFRACTORY FIXINGS

Materials

AMBIKA METAL INDUSTRIES manufactures refractory anchors and fibre fixing systems to exacting tolerances in a wide range of stainless steel and higher alloys. Standard fixings are available in stainless steel grade (304) and grade (310), and Inconel 601. Other grades of stainless steel, mild steels and alloys are available to suit requirements, including Stainless Steel grade (316).

Stainless Steel At Elevated Temperatures

Standard Stainless Steels In situations where standard steels reach their temperature limits, higher alloy and specially designed stainless steels provide a combination of increased strength and oxidation resistance, extending the useful working range up to higher temperatures around 1200°C.

Material Specification

Refractory fixings are available in a range of stainless steels and higher alloys:

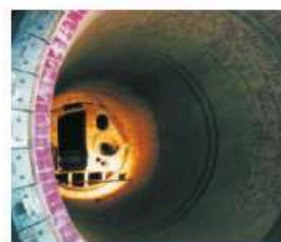
Grade 1.4301 (304) (18/8), Grade 310, Inconel Alloy 601

Other Grades

Refractory fixings can be supplied in other grades on request, including Stainless Steel grade 1.4401 (316). Please contact **Navkar Precision** for more details.

Using Stainless Steel At High Temperatures

The resistance to oxidation of stainless steel depends largely on the chromium content. Two other alloying elements, nickel and silicon, can also be instrumental in enhancing the oxidation resistance of the steels.



PRODUCT RANGE

We have been serving the industry's refractory needs for the past many years.

Our main products are

Refractory Anchors (V, Y, Zig - Zag etc.)

Hangers,

C clips,

Roof Hangers

Stiffen Plate.

Air Nozzle For Power Plant

Brick plates,

S.S. fibers

Retainer Plate

Bolts

Studs etc.

Any Small Fabrication work as per drawing

Refractory anchors & other materials are available in expanded metal, hex steel grid and special grid. All products are available in stainless steel grades 304, 316, 310, 321 as well as carbon steel, alloy steel and other standard grades. Thickness from 3 mm to 12 mm

Specification	Type 304	Type 310	Inconel™ Alloy 601
Nearest Werkstoff	1.4301	1.4845	-
Maximum service temp. under certain conditions	800°C	1100°C	1150-1230°C
Melting point	1440°C	1490°C	1300-1375°C

Notes: Inconel™ is a trademark of INCO Ltd



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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



Nut Ferrule



Union



Reducing Union



Bulkhead Union



Male Connector



Female Connector



Male Adaptor

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 65 Deg C for e.g., steam. These Syphon Tubes acts as a cooling coil and protects the gauge from high temperature vapors.

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. Forged Tee / Elbow / Cross



MANIFOLD VALVE



CONDENSATE POT



S.S. FORGED BLIND
HEX TEE



S.S. FORGED BLIND
HEX ELBOW



S.S. ELBOW 45°



S.S. CROSS



Formulae of Calculating Weight

1) Weight of Stainless Steel Pipe

O.D. (mm) - W. Thick (mm) X W. Thick (mm) X 0.0248 = Wt. Per Mtr.

O.D. (mm) - W. Thick (mm) X W. Thick (mm) X 0.00756 = Wt. Per Feet

2) Weight of Stainless Steel Round Bar

Dia (mm) X Dia (mm) X 0.00623 = Wt. Per Mtr.

Dia (mm) X Dia (mm) X 0.0019 = Wt. Per Feet

3) Weight of Stainless Steel Square Bar

Dia (mm) X Dia (mm) X 0.00788 = Wt. Per Mtr.

Dia (mm) X Dia (mm) X 0.0024 = Wt. Per Feet

4) Weight of Stainless Steel Hexagonal Bar

A/F (mm) X A/F (mm) X 0.00680 = Wt. Per Mtr.

A/F (mm) X A/F (mm) X 0.002072 = Wt. Per Feet

5) Weight of Stainless Steel Flat Bar

Width (mm) X Thickness (mm) X 0.00798 = Weight per Mtr.

Width (mm) X Thickness (mm) X 0.00243 = Weight per Feet

6) Weight of Stainless Steel Sheets & Plates

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) X W. Thick (mm) X W. Thick (mm) X 0.0260 = Wt. Per Mtr.

9) Making of Pipe from Sheet / Plates

O.D. (mm) X Thick (mm) X 3.14 = Width of Cutting Sheet / Plates

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 Mtr. / 3.2808 Wt per Ft.

Barlow's Formula for calculating bursting pressure

$P = 2ST/D$ or $t = DP/2S$ or $S = DP/2T$ or $D = 2ST/P$

P = Bursting Pressure P Si., S= Tensile Strength of tube,

T = Wall Thickness (in inches)

D = Outside Diameter (in inches)

13) Formula for Healthy Business

Honesty + Quality of Goods + Quick Service + Reasonable Rate

= Good Healthy Business



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Application Industries



- | | | |
|------------------------------|------------------------|---------------------|
| ● TEXTILE INDUSTRIES | ● PHARMACEUTICALS | ● FOOD INDUSTRIES |
| ● AUTOMOBILE INDUSTRIES | ● BEVERAGE INDUSTRIES | ● STEEL INDUSTRY |
| ● ACID & CHEMICAL INDUSTRIES | ● SUGAR INDUSTRIES | ● REFINERIES PLANTS |
| ● PAPER & PULP INDUSTRIES | ● WATER PIPING SYSTEMS | ● POWER |
| ● OIL & GAS INDUSTRIES | ● FERTILIZER | ● Railway |

Quality Policy

- To strive for customer satisfaction by service and technological Integration.
- All departments are fully atomized for better supply chain management to offer best product quality & prompt service to customers.
- To Train, Motivate and Encourage Employees in achieving Company's Goals.
- All our products passes through best of quality systems for material control, process control, testing, finishing and marking.
- Create a sense of responsibility amongst all members of the organization.
- To maintain a competent work force through training and continual improvement of quality Management Skills.
- Continually improve our Quality Management System to ensure its continuing suitability to enable us to stay ahead of competition.





GSTIN : 27AZQPD0128B1ZU



An ISO 9001 : 2015 Certified Co.



AMBIKA METAL INDUSTRIES

GSTIN : 27AZQPD0128B1ZU

Manufacturer, Exporter & Supplier of Refractory Anchors

Stockist & Suppliers of : Stainless Steel Sheet, Coil, Plates, Pipes, Other Ferrous & Non Ferrous Material.

S.S Seamless Pipes & Pipe Fittings, M.S. Seamless Pipes & Pipe Fittings etc.

PIPES | TUBES | PIPE FITTINGS | FLANGES | ANCHORS | ROUND BARS | VALVES | PLATE | ANGLE-CHANNEL

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