



BS EN ISO 9001:2015



BHAWAL STEEL AGENCY

AN ISO 9001 : 2015 CERTIFIED CO.



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BHAWAL STEEL AGENCY

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About Us

Bhawal Steel Agency is a Leading Manufacturer, extensive Stockholder of piping products for the Oil, Gas, Petrochemical and Nuclear Industries. We are the Manufacturer of Butt-weld Fittings, Forged Fittings, Compression Fittings, Outlets, Flanges & Long Radius Bends in Materials like Stainless Steel, Carbon Steel, Alloy Steel, Duplex & Super Duplex Steel, Nickel Alloys etc.

Why Us

We are a renowned name in this domain engaged in providing various types of Stainless steel, Carbon Steel & Alloy Steel Products; we have gained immense client's appreciation, Owing to our excellent product quality and transparent dealings.

- Cost-effective rates
- Customized solution
- Customized packaging
- Customer focused approach
- Easy payment modes
- Good Financial Position & TQM
- Superior quality products
- Timely delivery schedule
- Timely delivery of products
- Experience and specialty in work



Who We Are

Manufacturer

We are Professional Exporter & Manufacturer of Fasteners, Flanges, ERW Pipes of stainless steel pipes, Alloy steel & Nickel Alloy Grade delivered globally to the whole of the world.

Stockist

We are one of the largest stockholder of Stainless Steel, Nickel Alloys, Alloy Steel, Duplex/Super Duplex steel which are supplied to domestic & international market.

Supplier

For over years, customers have depended on us for the very best in specialty metals, complete processing services, timely delivery and expert service.

Exporter

We are one of the reputed export houses from India. It is an organization with strong roots and a variegated past with a clear vision of future.

Our Vision

To enlarge our product portfolio and production capacities leveraging our domain knowledge, expertise and resources by fostering global partnerships and alliances to become leading global player with dominant market share.

To be the partner of choice for our customers by providing High Quality Steel Pipes, Steel Tubes & industrial Steel pipes for Important sectors Like Oil & Gas with enhancing services tailored to meet their requirements.

To develop bench mark innovations and technologies to suit the changing requirements of the customers & the industry by continuous investments in updating our manufacturing & human resources.

To provide total customer satisfaction through quality products and services at competitive costs.





Pipes & Tubes



Stainless Steel: ASTM A312 TP 304/ 304L/ 304H/ 316/ 316L/ 317/ 317L/ 321/310/ 347/ 904L etc.

Carbon Steel: ASTM A53 GR. B/ A106 GR. B/ API 5L GRADE B/ API 5L GR. X42/46/52/56/60/65/70/

Low Temperature, Carbon Steel: A333 Gr.3/ Gr.6 etc.

Alloy Steel: ASTM A335 GR. P1/ P5/ P9/ P11/ P22/ P91 etc.

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

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

Types: Round, Square, Rectangular.

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

Wall Thickness: Sch. 5S to Sch. XXS

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. 5S to Sch. XXS.

Flanges



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

Carbon Steel: ASTMA105/A694F42/46/52/56/60/65/ 70/A350 LF3/A350 LF2, etc.

Alloy Steel: ASTMA182 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#.

Instrumentation / Ferrule Fittings



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

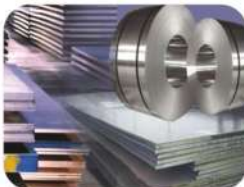
Carbon Steel : ASTM A105 / A694 F42/46/ 52/56/ 60/ 65/70 / A350 LF3/A350 LF2.

Alloy Steel: ASTMA182F1/ F5/ F9/ F11/ F22/ F91 etc.

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

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

Sheets, Plates Coils & Rods



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, Phosphatised, Cadium 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.



Pipes & Tubes

Stainless & Duplex Steel Pipes

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

Carbon & Alloy Steel Pipes

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

Nickel & Copper Alloy Pipes

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

Nickel Alloy

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

Copper Alloy

ASTM / ASME SB 111 UNS NO. C 10100, 10200, 10300, 10800, 12000, 12200, 70600, 71500.
ASTM / ASME SB 466 UNS NO. C 70600 (CU -NI- 90/10), C 71500 (CU -NI- 70/30)
IBR & NON-IBR

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. ASTM / ASME SA 358 CL 1 & CL 3 GR . 304, 304L, 304H, 309S, 309H, 310S, 310H, 316, 316H, 321, 321H, 47.

Duplex Steel

ASTM / ASME SA 790 UNS NO

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,





C.S / A.S. / S.S PIPE AND TUBES SCHEDULE DIMENSIONS, WALL THICKNESS, WT./MTR. (KG)

Nomial Pipe Size	Outside Dia. mm	ANSI B 36.10 / ASME B 36.10 (2004)										ANSI B 36.19 / ASME B 36.19 (2004)									
		Schedule 10	Schedule 20	Schedule 30	Schedule STD	Schedule 40	Schedule 60	Schedule XS	Schedule 80	Schedule 100	Schedule 120	Schedule 140	Schedule 160	Schedule XKS	Schedule SS	Schedule 10S	Schedule 40S	Schedule 80S			
inch	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm		
1/4"	6	13.7																			
3/8"	10	17.1																			
1/2"	15	21.3																			
3/4"	20	28.7																			
1"	25	33.4																			
1 1/4"	32	42.3																			
1 1/2"	40	48.3																			
2"	50	60.3																			
2 1/2"	65	73.0																			
3"	80	88.9																			
3 1/2"	90	101.6																			
4"	100	114.3																			
5"	125	141.3																			
6"	150	168.3																			
8"	200	219.1																			
10"	250	273.0																			
12"	300	323.8																			
14"	350	355.6																			
16"	400	406.4																			
18"	450	457.2																			
20"	500	508.0																			
22"	550	558.8																			
24"	600	609.6																			
26"	650	660.4																			
28"	700	711.2																			
30"	750	762.0																			
32"	800	812.8																			
34"	850	863.6																			
36"	900	914.4																			

Formula : Weight of Steel Pipes & Tubes = CD(mm) x WT.(mm) x W.T.(mm) x 0.02466 = kg per meter Feet = meter x 3.281 All Dimension are in Kilograms & Meters



STAINLESS STEEL SEAMLESS & WELDED PIPES CHEMICAL & PHYSICAL PROPERTIES

Grade	Chemical Composition									Tensile Test				
	C	Si	Mn	P Max	S Max	Cr	Mo	Ni	Other Elements	Tensile Strength kg/mm ² min	Yield Point Strength kg/mm ² min	Elongation in 2 or 50mm min% Curved strip and Tubular Specimens		
												Longitudinal		Transverse
												t ≤ 5/16in	t ≥ 5/16in	t ≤ 5/16in
TP304	0.08 max	0.75 max	2.0 max	0.040	0.030	18.0-20.0		8.00-11.0	-	52.52	20.90	35	-	25
TP304H	0.04-0.10	0.75 max	2.0 max	0.040	0.030	18.0-20.0		8.00-11.0	-	52.52	20.90	35	-	25
TP304L	0.035 max	0.75 max	2.0 max	0.040	0.030	18.0-20.0		8.00-13.0	-	49.46	17.34	35	-	25
TP304N	0.08 max	0.75 max	2.0 max	0.040	0.030	18.0-20.0		8.00-11.0	N 0.10-0.16	56.10	24.61	35	-	25
TP304LN	0.035 max	0.75 max	2.0 max	0.040	0.030	18.0-20.0		8.00-11.0	N 0.10-0.16	52.52	20.90	35	-	25
TP309S	0.08 max	0.75 max	2.0 max	0.045	0.030	22.0-24.0	0.75 Max	12.0-15.0	-	52.52	20.90	35	-	25
TP310S	0.08 max	0.75 max	2.0 max	0.045	0.030	24.0-26.0	0.75 Max	19.0-22.0	-	52.52	20.90	35	-	25
TP316	0.08 max	0.75 max	2.0 max	0.040	0.030	16.0-18.0	2.00-3.00	11.0-14.0	-	52.52	20.90	35	-	25
TP316H	0.04-0.10	0.75 max	2.0 max	0.040	0.030	16.0-18.0	2.00-3.00	11.0-14.0	-	52.52	20.90	35	-	25
TP316L	0.035 max	0.75 max	2.0 max	0.040	0.030	16.0-18.0	2.00-3.00	10.0-15.0	-	49.46	17.34	35	-	25
TP316N	0.08 max	0.75 max	2.0 max	0.040	0.030	16.0-18.0	2.00-3.00	11.0-14.0	N 0.10-0.16	56.10	24.61	35	-	25
TP316LN	0.035 max	0.75 max	2.0 max	0.040	0.030	16.0-18.0	2.00-3.00	11.0-14.0	N 0.10-0.16	52.52	20.90	35	-	25
TP317	0.08 max	0.75 max	2.0 max	0.040	0.030	18.0-20.0	3.00-4.00	11.0-14.0	-	52.52	20.90	35	-	25
TP317L	0.035 max	0.75 max	2.0 max	0.040	0.030	18.0-20.0	3.00-4.00	11.0-15.0	-	52.52	20.90	35	-	25
TP321	0.08 max	0.75 max	2.0 max	0.040	0.030	17.0-20.0		9.0-13.0	Ti5xC%-0.70	52.52	20.90	35	-	25
TP321H	0.04-0.10	0.75 max	2.0 max	0.040	0.030	17.0-20.0		9.0-13.0	Ti4xC%-0.60	52.52	20.90	35	-	25
TP347	0.08 max	0.75 max	2.0 max	0.040	0.030	17.0-20.0		9.0-13.0	Nb+TA10xC%-1.00	52.52	20.90	35	-	25
TP347H	0.04-0.10	0.75 max	2.0 max	0.040	0.030	17.0-20.0		9.0-13.0	Nb+TA8xC%-1	52.52	20.90	35	-	25
TP348	0.08 max	0.75 max	2.0 max	0.040	0.030	17.0-20.0		9.0-13.0	Nb+TA10xC%-1	52.52	20.90	35	-	25
TP348H	0.04-0.10	0.75 max	2.0 max	0.040	0.030	17.0-20.0		9.0-13.0	Nb+TA8xC%-1	52.52	20.90	35	-	25
TPXM-10	0.08 max	1.00 max	8.00-10.00	0.040	0.030	19.0-21.50		5.50-7.50	NO.15-0.40	63.22	35.18	35	-	25
TPXM-11	0.04 max	1.00 max	8.00-10.00	0.040	0.030	19.0-21.50		5.50-7.50	NO.15-0.40	63.22	35.18	35	-	25
A240 TP304	0.08 max	0.75 max	2.0 max	0.045	0.030	18.0-20.0	-	8.00-10.50	NO.10 Max			Class 1: Double welded pipes & full Radiography		
TP310S	0.08 max	0.75 max	2.0 max	0.045	0.030	24.0-26.0	-	19.0-22.0				Class 2: Double welded no Radiography		
TP316	0.08 max	0.75 max	2.0 max	0.045	0.030	16.0-18.0	2.0-3.0	10.0-14.0	NO.10 Max			Class 3: Single welded full Radiography		
TP316L	0.035 max	0.75 max	2.0 max	0.045	0.030	16.0-18.0	2.0-3.0	10.0-14.0	NO.10 Max			Class 4: Single welded full Radiography rootpass without addition of filler metal		
TP317L	0.035 max	0.75 max	2.0 max	0.045	0.030	18.0-20.0	3.0-4.0	11.0-15.0	NO.10 Max			Class 5: Double welded spot Radiography		
TP321	0.08 max	0.75 max	2.0 max	0.045	0.030	17.0-19.0	-	9.0-12.0	NO.10 Max					
TP347	0.08 max	0.75 max	2.0 max	0.045	0.030	17.0-19.0	-	9.0-13.0	Cb+TA10xC/1.0					



PIPE & TUBES ASTM / API / BS / DIN / IS

MATERIAL SPECIFICATION FOR PIPE & TUBES OF STAINLESS STEEL, ALLOY STEEL, CARBON STEEL & MILD STEEL.

PIPE SPECIFICATION	CHEMICAL PROPERTIES				MECHANICAL PROPERTIES				MECHANICAL PROPERTIES			OTHERS
	C%	Mn%	P%	S%	Si%	Cr%	Ni%	Mo%	U.T.S. (Min) Mpa	Y.S. (Min) Mpa	ELONG. (Min) L T	
ASTMA 312 Gr. TP 304	0.080 Max	2.00 Max	0.045	0.030	1.00 Max	18.0-20.0	8.0-11.0	-	515	205	35 25	-
ASTMA 312 Gr. TP 304L	0.035 Max	2.00 Max	0.045	0.030	1.00 Max	18.0-20.0	8.0-13.0	-	485	170	35 25	-
ASTMA 312 Gr. TP 304H	0.040-0.10	2.00 Max	0.045	0.030	1.00 Max	18.0-20.0	8.0-11.0	-	515	205	35 25	-
ASTMA 312 Gr. TP 304LN	0.035 Max	2.00 Max	0.045	0.030	1.00 Max	18.0-20.0	12.0-12.0	-	515	205	35 25	N%=>0.10-0.16
ASTMA 312 Gr. TP 309S	0.080 Max	2.00 Max	0.045	0.030	1.00 Max	22.0-24.0	10.0-15.0	0.75 Max	515	205	35 25	-
ASTMA 312 Gr. TP 310S	0.080 Max	2.00 Max	0.045	0.030	1.00 Max	24.0-26.0	19.0-22.0	0.75 Max	515	205	35 25	-
ASTMA 312 Gr. TP 316	0.080 Max	2.00 Max	0.045	0.030	1.00 Max	16.0-18.0	11.0-14.0	2.00-3.00	515	205	35 25	-
ASTMA 312 Gr. TP 316L	0.035 Max	2.00 Max	0.045	0.030	1.00 Max	16.0-18.0	10.0-14.0	2.00-3.00	485	170	35 25	-
ASTMA 312 Gr. TP 316LN	0.040-0.10	2.00 Max	0.045	0.030	1.00 Max	16.0-18.0	11.0-14.0	2.00-3.00	515	205	35 25	N%=>0.10-0.16
ASTMA 312 Gr. TP 317	0.080 Max	2.00 Max	0.045	0.030	1.00 Max	18.0-20.0	11.0-14.0	3.00-4.00	515	205	35 25	-
ASTMA 312 Gr. TP 317L	0.035 Max	2.00 Max	0.045	0.030	1.00 Max	18.0-20.0	11.0-15.0	3.00-4.00	515	205	35 25	-
ASTMA 312 Gr. TP 321	0.080 Max	2.00 Max	0.045	0.030	1.00 Max	17.0-19.0	9.0-12.0	-	515	205	35 25	Ti%=(6XC)+0.70
ASTMA 312 Gr. TP 321H	0.040-0.10	2.00 Max	0.045	0.030	1.00 Max	17.0-19.0	9.0-12.0	-	515	205	35 25	Ti%=(4XC)+0.60
ASTMA 312 Gr. TP 321H	0.040-0.10	2.00 Max	0.045	0.030	1.00 Max	17.0-19.0	9.0-12.0	-	515	205	35 25	Ti%=(4XC)+0.60
ASTMA 312 Gr. TP 347	0.080 Max	2.00 Max	0.045	0.030	1.00 Max	17.0-19.0	9.0-13.0	-	515	205	35 25	Cb%=(10XC)+1.00
ASTMA 312 Gr. TP 347H	0.040-0.10	2.00 Max	0.045	0.030	1.00 Max	17.0-19.0	9.0-13.0	-	515	205	35 25	Cb%=(8XC)-1.10
ASTMA 358 Gr. TP 304	0.080 Max	2.00 Max	0.045	0.030	0.75 Max	18.0-20.0	8.0-10.5	-	515	205	40	N%=>0.10 Max, HRB-92 Max
ASTMA 358 Gr. TP 304L	0.035 Max	2.00 Max	0.045	0.030	0.75 Max	18.0-20.0	8.0-12.0	-	485	170	40	N%=>0.10 Max, HRB-92 Max
ASTMA 358 Gr. TP 309S	0.080 Max	2.00 Max	0.045	0.030	0.75 Max	22.0-24.0	12.0-15.0	-	515	205	40	HRB-95 Max
ASTMA 358 Gr. TP 310S	0.080 Max	2.00 Max	0.045	0.030	1.50 Max	24.0-26.0	19.0-22.0	-	515	205	40	HRB-95 Max
ASTMA 358 Gr. TP 316	0.035 Max	2.00 Max	0.045	0.030	0.75 Max	16.0-18.0	10.0-14.0	2.00-3.00	515	205	40	N%=>0.10 Max, HRB-95 Max
ASTMA 358 Gr. TP 316L	0.080 Max	2.00 Max	0.045	0.030	0.75 Max	16.0-18.0	10.0-14.0	2.00-3.00	485	170	40	N%=>0.10 Max, HRB-95 Max
ASTMA 358 Gr. TP 321	0.080 Max	2.00 Max	0.045	0.030	0.75 Max	17.0-19.0	9.0-12.0	-	515	205	40	N%=>0.10 Max, Ti%=(5XC)+0.70, HRB-95 Max
ASTMA 358 Gr. TP 347	0.080 Max	2.00 Max	0.045	0.030	0.75 Max	17.0-19.0	9.0-13.0	-	515	205	40	Cb%=(10XC)+1.00, HRB-92 Max
ASTMA 106 Gr. A	0.25 Max	0.27-0.93	0.035	0.035	0.10 Min	0.40 Max	0.40 Max	0.15 Max	330	205	35 25	Cu%=>0.40 Max, Va%: 0.08
ASTMA 106 Gr. B	0.30 Max	0.29-1.06	0.035	0.035	0.10 Min	0.40 Max	0.40 Max	0.15 Max	415	240	30 16.5	Cu%=>0.40 Max, Va%: 0.08
ASTMA 106 Gr. C	0.35 Max	0.29-1.06	0.035	0.035	0.10 Min	0.40 Max	0.40 Max	0.15 Max	485	275	30 16.5	Cu%=>0.40 Max, Va%: 0.08
ASTMA 53 Gr. A	0.25 Max	0.95 Max	0.050	0.045	-	0.40 Max	0.40 Max	0.15 Max	330	205	30 16.5	Cu%=>0.40 Max, Va%: 0.08
ASTMA 53 Gr. B	0.30 Max	1.20 Max	0.050	0.045	-	0.40 Max	0.40 Max	0.15 Max	415	240	30 16.5	Cu%=>0.40 Max, Va%: 0.08
ASTMA 333 Gr. 1	0.30 Max	0.40-1.06	0.025	0.025	0.10 Min	-	-	-	380	205	35 25	Impact Test= 45 °C, J=18 Min, HRB=85 Max
ASTMA 333 Gr. 6	0.30 Max	0.29-1.06	0.025	0.025	0.10 Min	-	-	-	415	240	30 16.5	Impact Test= 45 °C, J=18 Min, HRB=85 Max
ASTMA 335 Gr. P1	0.10-0.20	0.30-0.60	0.025	0.025	0.10-0.50	0.40-0.65	0.44-0.65	0.44-0.65	380	205	30 20	VH=0.14-0.25, Ni%=>0.00-0.070, Al%=>0.02 Max, Cb%=>0.05-0.10
ASTMA 335 Gr. 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	0.44-0.65	380	205	30 20	HRB=85 Max
ASTMA 335 Gr. P5	0.15 Max	0.30-0.60	0.025	0.025	0.50 Max	4.00-6.00	0.45-0.65	0.45-0.65	415	205	30	HRB=85 Max
ASTMA 335 Gr. P9	0.15 Max	0.30-0.60	0.025	0.025	0.25-1.00	8.00-10.00	0.90-1.10	0.90-1.10	415	205	30 20	HRB=85 Max
ASTMA 335 Gr. 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	0.44-0.65	415	205	30 20	HRB=85 Max
ASTMA 335 Gr. P12	0.05-0.15	0.30-0.61	0.025	0.025	0.50 Max	0.80-1.25	0.44-0.65	0.44-0.65	415	220	30 20	HRB=85 Max
ASTMA 335 Gr. P22	0.05-0.15	0.30-0.60	0.025	0.025	0.50 Max	1.90-2.60	0.87-1.13	0.87-1.13	415	205	30 20	HRB=85 Max
ASTMA 335 Gr. P91	0.08-0.12	0.30-0.60	0.020	0.010	0.20-0.50	8.00-9.50	0.40 Max	0.85-1.05	620	440	20	HRB=72 Max
ASTMA A 213 Gr. T2	0.10-0.20	0.30-0.61	0.025	0.025	0.10-0.30	0.50-0.81	0.44-0.65	0.44-0.65	415	205	30	HRB=79 Max
ASTMA A 213 Gr. T5	0.15 Max	0.30-0.60	0.025	0.025	0.50 Max	4.00-6.00	0.45-0.65	0.45-0.65	415	205	30	HRB=85 Max
ASTMA A 213 Gr. T11	0.05-0.15	0.30-0.60	0.025	0.025	1.00-1.00	1.00-1.50	0.44-0.65	0.44-0.65	415	205	30	HRB=85 Max
ASTMA A 213 Gr. T12	0.05-0.15	0.30-0.61	0.025	0.025	0.50 Max	0.80-1.25	0.44-0.65	0.44-0.65	415	220	30	HRB=85 Max
ASTMA A 213 Gr. T22	0.05-0.15	0.30-0.60	0.025	0.025	0.50 Max	1.90-2.60	0.87-1.13	0.87-1.13	415	205	30	HRB=85 Max
ASTMA A 179	0.06-0.18	0.27-0.63	0.035	0.035	-	-	-	-	325	180	35	HRB=72 Max
ASTMA A 210 Gr. A1	0.27 Max	0.93 Max	0.035	0.035	0.10 Min	-	-	-	415	255	30	HRB=79 Max



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

Nominal Bore		Outside Diameter		Light		Medium		Heavy	
Thickness	Weight	Thickness	Weight	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	3.25	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
- 10 percent
(2) Seamless tubes + Not Limited
- 12.5 percent
- (b) Weight :
(1) Single tube (light series) + 10 percent
- 8 percent
(2) Single tube (medium and heavy series) + 10 percent

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

Nominal Bore	Maximum Permissible Pressure N/mm ²	Maximum Permissible Temperature °C	
mm	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 Including 150 mm	0.50	5.10	160

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

BUTT-WELD PIPE FITTINGS



BHAWAL STEEL AGENCY

AN ISO 9001 : 2008 CERTIFIED CO.



CHEMICAL COMPOSITION & MECHANICAL PROPERTIES

Steel type	ASTM Grade	Chemical composition										Mechanical properties				
		C% max	Mn%	P% max	S% max	Si%	Cr%	Mo%	Ni%	Others	R.min. Tensile Strength MPa	S.min. Yield Strength MPa	A% min. (2" /4D)		Impact test KCV (2) J	
													Long.	Transv.		
A234	WPB(1)	0.3	0.29-1.06	0.05	0.058	0.10 min	0.4	0.15	0.4	Cu=0.4 V=0.06 Cb=0.02	415-585	240	30	20	-	
	WPC(1)	0.35	0.29-1.06	0.05	0.058	0.10 min	0.4	0.15	0.4	Cu=0.4 V=0.06 Cb=0.02	485-655	275	30	20	-	
A420	WPL/8(1)	0.3	0.6-1.35	0.035	0.04	0.15-0.30	0.3	0.12	0.4	Cu=0.4 V=0.06 Cb=0.02	415-585	240	30	16.5	-45°C 17.6/13.6	
	WPL3	0.2	0.31-0.64	0.05	0.05	0.13-0.37	-	-	3.2-3.8	-	450-620	240	30	20	-101°C 17.6/13.6	
A234	WP1	0.28	0.30-0.9	0.045	0.045	0.10-0.50	-	0.44-0.65	-	-	380-550	205	30	20	-	
	WP12CL1	0.05-0.2	0.3-0.8	0.045	0.045	0.6	0.8-1.25	0.44-0.65	-	-	415-585	220	30	20	-	
	WP12CL2	-	-	-	-	-	-	-	-	-	485-655	275	30	20	-	
	WP11CL1	0.5-0.15	0.3-0.6	0.3	0.3	0.5-1.0	1.0-1.5	0.44-0.65	-	-	415-585	205	30	20	-	
	WP11CL2	0.5-0.2	0.3-0.8	0.4	0.4	0.5-1.0	1.0-1.5	0.44-0.65	-	-	485-655	275	30	20	-	
	WP11CL3	-	-	-	-	-	-	-	-	-	520-690	310	30	20	-	
	WP22CL1	0.05-0.15	0.3-0.6	0.04	0.04	0.5	1.9-2.6	0.87-1.13	-	-	415-585	205	30	20	-	
	WP22CL3	-	-	-	-	-	-	-	-	-	520-690	310	30	20	-	
	WP5	0.15	0.3-0.6	0.04	0.03	0.5	4.0-6.0	0.44-0.65	-	-	415-585	205	30	20	-	
	WP9	0.15	0.3-0.6	0.03	0.03	0.25-1.0	8.0-10.0	0.9-1.10	-	-	415-585	205	30	20	-	
	WP91	0.08-0.12	0.3-0.6	0.02	0.01	0.2-0.5	8.0-9.5	0.85-1.05	0.4	V=0.18-0.25 Cb=0.06-0.10 Ni=0.03 - 0.07 Al=0.04	585-760	415	20	-	-	
A403	WP304	0.08	2	0.045	0.03	1	18-20	-	8.0-11.0	-	515	205	28	20	-	
	WP304L	0.035	2	0.045	0.03	1	18-20	-	8.0-13.0	-	485	170	28	20	-	
	WP304H	0.04-0.10	2	0.045	0.03	1	18-20	-	8.0-11.0	-	515	205	28	20	-	
	WP316	0.08	2	0.045	0.03	1	18-20	2.0-3.0	11.0-14.0	-	515	205	28	20	-	
	WP316L	0.035	2	0.045	0.03	1	18-20	2.0-3.0	10.0-16.0	-	485	170	28	20	-	
	WP321	0.08	2	0.045	0.03	1	17.0-20.0	-	9.0-13.0	Ti=5xC max 0.70%	515	205	28	20	-	
	WP321H	0.04-0.10	2	0.045	0.03	1	17.0-20.0	-	9.0-13.0	Ti=4xC max 0.60%	515	205	28	20	-	
	WP347	0.08	2	0.045	0.03	1	17.0-20.0	-	9.0-13.0	Cb=Ta=10xN/C max 0.10%	515	205	28	20	-	
	WP347H	0.04-0.10	2	0.045	0.03	1	17.0-20.0	-	9.0-13.0	Cb=Ta=10xN/C max 0.10%	515	205	28	20	-	
	WPS 31254	0.02	1	0.03	0.01	0.8	19.5-20.5	6.0-6.5	17.5-18.5	N=0.18-0.22 Cu=0.5-1.0	515	205	28	20	-	
A815	S 31803	0.03	2	0.03	0.02	1	21.0-23.0	2.5-3.5	4.5-6.5	N=0.06-0.2	620	450	25	-	-	
	WP410	0.15	1	0.04	0.03	1	11.5-13.5	-	0.5	-	485-655	205	20	-	-	
B366	WPNIC10	0.06-0.10	1.5	-	0.015	1	19.0-23.0	-	30.0-35.0	Cu=0.75	450	170	30	-	-	
	WPNIC11	0.06-0.10	1.5	-	0.015	1	19.0-23.0	-	30.0-35.0	Al=0.15-0.80 Ti=0.15-0.60 Fe=30.5 min As=0.85-1.20	450	170	30	-	-	

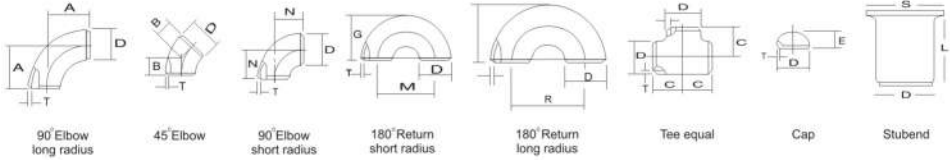


Titanium alloys, Nickel alloys, Inconel alloys, Coupro nickel & Aluminium alloys are also available upon request.
 For each reduction of 0.01% below the specified carbon max., an increase of 0.06% Mn above the specified max. will be permitted up to 1.35% max.

2) Relative to 10x10 specimen.



BUTT WELDING PIPE FITTING DIMENSIONAL STANDARD ANSI B-16.9, B-16.28



Nominal Pipe Size		Outside Diameter	Center to Face				Back to Face			Center to Center			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	38.00	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	76.0	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	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	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	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	614.4	152.4	305.0
24	600	610	914.0	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	991.0	406.0	495.0	660.0	267.0							
28	700	711	1067.0	438.0	521.0	771.0	267.0							
30	750	762	1143.0	470.0	589.0	762.0	267.0							
32	800	813	1219.0	502.0	597.0	813.0	267.0							
34	850	864	1295.0	533.0	635.0	864.0	267.0							
36	900	914	1372.0	565.0	673.0	914.0	267.0							

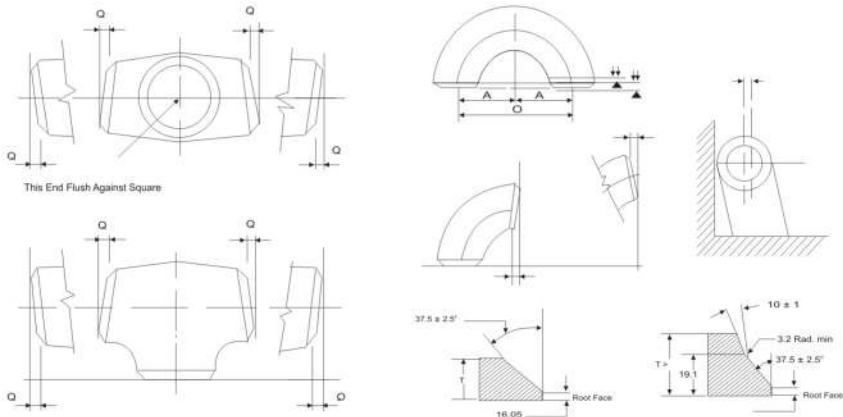


T = Wall Thickness



**DIMENSIONAL TOLERANCES AS PER ANSI B 16.9/B 16.28/
MSS SP-43 BUTT WELD FITTING**

ALL FITTINGS				90°/60°/45° /30° ELBOWS & TEES		REDUCERS		180° RETURNS				CAPS		ANGULARITY TOLERANCE						
Nominal Pipe Size Inch/mm	Outside Diameter at Level	Inside Dia meter	Wall Thickness at End	Centre to End		Overall Length Dimensions		Centre to End		Back to Face Dimensions		Alignment of End Dimensions		Overall length		Nominal Pipe Size	Off Angle Inch/mm	Off Plane		
	D		T		A.B.C.M		H		O		K		U		E		Q		P	
	(1) B16.9	MSS SP43	(2) B16.9	B16.9	MSS SP43	B16.9	MSS SP43	B16.9	MSS SP43	B16.9	MSS SP43	B16.9	MSS SP43	B16.9	MSS SP43	B16.9	MSS SP43	B16.9	MSS SP43	
1/2" TO 2 1/2" 80 TO 90	±1.0		±0.8			FROM 1/2" TO 10" 15 TO 250	FROM 3/4"	FROM 1/2" TO 10" 15 TO 250	FROM 1/2" TO 8" 15 TO 200						±4	±3.17	1/2" TO 4" 15 TO 100	1		1
3" TO 3 1/2" 80 TO 90			±0.79														5" TO 8" 125 TO 200	2		4
4" 100	+2 -1		±1.6			±2	±1.59	±2	±1.59	±7	±6.35	±7	±6.35	±1.0	±0.79		10" TO 12" 250 TO 300	3		5
5" TO 6" 125 TO 150	+3 -1		+1.59													±7	±6.35	14" TO 16" 350 TO 400	3	16" TO 24" 400 TO 600 1.6
6" 200	±2	-0.79		Not Less Than 87.5% Nominal Thk.	Not Less Than 87.5% Nominal Thk.	FROM 12" TO 30" ±3 300 TO 750	±2.38	FROM 12" TO 30" ±3 300 TO 750	10" TO 20" ±2.38 250 TO 600								18" TO 24" 450 TO 600	4		10
10" TO 18" 250 TO 450	+4 -3	+2.38 -0.79	±3.2							±10"	±9.53						26" TO 30" 650 TO 750	5		10
20" TO 24" 500 TO 600	+6 -5	3.17 0.79										±2.0"	±1.59				32" TO 42" 800 TO 1050	5		13
26" TO 30" 550 TO 750	+7 -5		±4.8													±10	44" TO 48" 1100 TO 1200	5		20
32" TO 48" 800 TO 1200	+7 -5					±5											42" TO 48" 1050 TO 1200	±5	950 TO 1200 3.2	±20



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 thickness are to be specified by the purchaser.
3. Out of roundness tolerances shall be the difference between the Max. dia measured on any radial cross-section.
4. All dimensions are in millimeters except nominal pipe sizes which are in inches.

WELDING BEVEL STANDARDS ANSI B 16.25

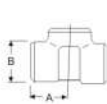


**DIMENSION IN MM OF FORGED SCREWED FITTINGS
TO ANSI B-16.11 THREADED TO ASA B 2.1**

90° ELBOWS



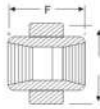
TEE



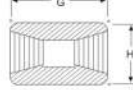
45° ELBOW



UNION



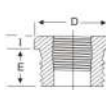
COUPLING



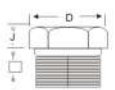
PIPE CAP



BUSHING



HEX HEAD PLUG



HALF COUPLING = G/2

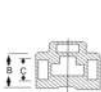
NOM BORE	PIPE O.D.	3000 L.B.S.						COMMON FACTORS						6000 L.B.S					
		A	B	C	G	H	K	D	E	F	I	J	L	A	B	C	G	H	K
1/8"	10.3	21	22	17	32	16	19	11	10	40	-	6	-	25	25	19	32	22	-
1/4"	13.7	25	25	19	35	19	25	16	11	43	3	6	32	29	33	22	35	25	27
3/8"	17.2	29	33	22	36	22	25	17.5	13	48	4	8	38	33	38	25	38	32	27
1/2"	21.3	33	38	25	48	29	32	22	15	51	5	8	46	38	46	29	48	38	33
3/4"	26.7	38	46	29	51	35	37	27	16	57	6	10	51	44	56	33	51	44	38
1"	33.4	44	56	33	60	44	41	35	19	64	6	10	60	51	62	35	60	57	43
1 1/4"	42.2	51	62	35	67	57	44	44.5	21	70	7	14	72	60	75	43	67	64	46
1 1/2"	48.3	60	75	43	79	64	44	51	21	79	8	16	80	64	84	44	79	76	48
2"	60.3	64	84	45	86	76	48	63.5	22	88	9	17	94	83	102	52	86	92	51
2 1/2"	73.02	83	102	52	92	92	60	76	27	116	10	21	122	95	121	64	92	108	64
3"	89.0	95	121	64	108	108	65	89	29	121	10	25	140	106	146	79	108	127	68
4"	114.5	114	152	79	121	140	68	117.5	32	150	13	25	180	114	152	79	121	159	75

SOCKET WELD FITTING TO ANSI B-16.11

90° ELBOWS



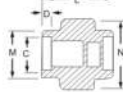
TEE



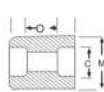
45° ELBOW



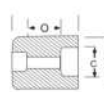
UNION



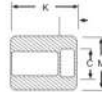
COUPLING



REDUCER



HALF COUPLING



CAP

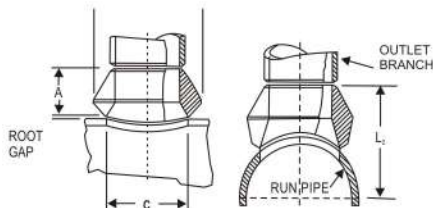


NOM BORE	PIPE O.D.	3000 L.B.S.								COMMON FACTORS				6000 L.B.S					
		A	B	K	J	L	M	N	P	Q	Cmin	Dmin	Omin	Omax	A	B	M	K	N
1/8"	10.3	22	18.5	26	16	40	17.3	32	17.5	10	10.7	10	5	8	22	22	20	25	46
1/4"	13.7	22	22	26	18	43	21.2	32	17.5	10	14.1	10	5	8	27	25	24	25	51
3/8"	17.2	25	25	26	19	48	25.4	36	19	10	17.6	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	55	43	122
2"	60.3	56	75	52	37	89	75	95	38	13	61.2	16	15	23	59	84	83	53	55
2 1/2"	73.02	60	92	52	48	114	91.3	125	38	16	73.8	16	14	24		102		56	
3"	89.00	76	110	52	51	127	108.8	140	44	16	89.8	16	14	24		121		58	
4"	114.50	88	137	58		150	136.9		48	19	115.5	19	14	24		152		64	

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



REDUCING & FLAT SIZE EXTRA STRONG, RUN AND BRANCH FORGED



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

30, 36 and larger sizes available on application.

SIZE ON SIZE EXTRA STRONG, RUN AND BRANCH FORGED

Each Outlet size listed is available to fit any run curvature. Design per MSS-SP-97. BW ends per B16.9 and B16.25

RUN PIPE SIZES Outlet sizes 6" and less fit a number of run sizes, and the fittings are marked accordingly. See pages 54-55 for run pipe size combination table(s).

SCHEDULES Extra Stron fittings are the same as Schedule 80 through 8". Pipe schedule numbers and weight designation are in accordance with ASME B36.10 A Schedule 80 Weldolet for sizes 10" and larger is available. Dimensions and pr application

Outlet Size Inches	Dimensions (Inches)			
	A	B	C	D
1/2	3/4	1-3/8	1-5/16	5/8
3/4	7/8	1-5/8	1-3/16	1-3/16
1	1-1/16	2	1-7/16	1-1/32
1-1/4	1-1/4	2-7/16	1-3/4	1-3/8
1-1/2	1-5/16	2-7/8	2	1-5/8
2	1-1/2	3-1/2	2-9/16	2-1/16
2-1/2	1-5/8	4-1/16	3	2-7/16
3	1-3/4	4-13/16	3-11/16	3-1/16
3-1/2	2	5-3/8	3-7/8	3-9/16
4	2	6	4-3/4	4
5	2-1/4	7-1/8	5-9/16	5-1/16
6	3-1/16	8-7/8	6-11/16	6-1/16
8	3-7/8	10-5/8	8-11/16	7-5/8
10	3-1/2	12-7/8	10-7/16	9-3/4
12	3-15/16	15-3/16	13	11-3/4
14	4-1/8	16-11/16	14-5/16	13
16	4-7/16	18-7/8	16-1/2	15
18	4-11/16	21-1/8	18-5/8	17
20	5	23-3/8	20-13/16	16
24	5-1/2	27-7/8	25-1/8	23
26	5-3/4	30-1/8	27-3/4	25

30, 36 and larger sizes available on application.



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

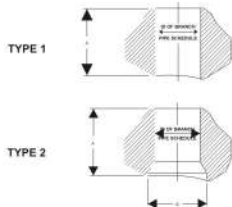
Each Outlet size listed is available to fit any run curvature.
Larger Sizes Available on Application.
Design per MSS-SP-97. BW ends per B16.9 and B16.25

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



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

HEAVY WALL FORGED



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

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

Type 1 - Straight through bore design

Type 2 - Conventional tapered bore design



Run Wall Thickness Branch Pipe Size	3/4		1		1-1/4		1-1/2		1-3/4		2		2-1/4		2-1/2		2-3/4		3	
	A	C	A	C	A	C	A	C	A	C	A	C	A	C	A	C	A	C	A	C
3	2-7/8	2906	3-7/32	2900	3-3/8	2906	3-5/8	2900	4-1/8	2900	4-9/16	2900	5	2900	5-1/2	2900	5-7/8	2900	6-1/16	2900
3-1/2	3-1/8	3.359	3-1/4	3.359	3-7/16	3.359	3-3/4	3.359	4-3/16	3.359	4-5/8	3.359	5-1/16	3.359	5-9/16	3.359	6	3.359	6-5/16	3.359
4	3-5/16	3.843	3-3/8	3.826	3-1/2	3.828	3-7/8	3.826	4-3/4	3.826	4-3/4	3.826	5-3/16	3.826	5-5/8	3.826	6-1/8	3.826	6-9/16	3.826
5	3-3/4	4.812	3-3/4	4.812	4	4.812	4-1/4	4.812	4-3/4	4.812	5-1/4	4.812	5-3/4	4.812	6-1/4	4.812	6-5/8	4.812	7-3/16	4.812
6	4-1/8	5.750	4-11/32	5.761	4-1/2	5.760	4-11/16	5.760	5-1/4	5.760	5-3/4	5.760	6-1/4	5.760	6-3/4	5.760	7-1/4	5.760	7-13/16	5.760
8	4-3/16	7.625	4-5/8	7.625	4-7/8	7.625	5-5/32	7.625	5-3/4	7.625	6-11/32	7.625	6-15/16	7.625	7-17/32	7.625	8-3/32	7.625	8-11/16	7.625
10	4-1/4	9.750	4-27/32	9.750	5	9.562	5-5/16	9.562	5-15/16	9.562	6-9/16	9.562	7-3/16	9.562	7-13/16	9.562	8-7/16	9.562	9-1/16	9.562
12	4-3/8	11.750	5-3/32	11.750	5-3/8	11.375	5-11/16	11.375	6-5/16	11.375	6-15/16	11.375	7-9/16	11.375	8-3/16	11.375	8-13/16	11.375	9-7/16	11.375
14	4-1/2	13	5-1/4	13	5-1/2	12.500	5-13/16	12.500	6-5/16	12.500	6-15/16	12.500	7-9/16	12.500	8-3/16	12.500	8-13/16	12.500	9-7/16	12.500
16	4-11/16	15	5-7/8	15	6	14.312	6-7/16	14.310	7-1/4	14.310	7-1/4	14.310	7-7/8	14.310	8-1/2	14.310	9-1/8	14.310	9-3/4	14.310
18	5-1/8	17	6-1/2	17	6-1/2	16.125	6-1/2	16.126	6-13/16	16.126	7-7/16	16.126	8-7/32	16.126	8-13/16	16.126	9-13/32	16.126	10-1/32	16.126
20	5-5/8	19	6-3/4	19	7	17.937	7-9/16	17.938	7-25/32	17.938	8-3/32	17.938	8-21/32	17.938	9-1/4	17.938	9-29/32	17.938	10-15/32	17.938
24	6-1/2	23	7-5/8	23	8	21.564	8-23/32	21.564	8-31/32	21.564	9-13/16	21.568	10-1/2	21.568	11	21.564	12-9/16	21.564	10-21/32	21.564

REASONS FOR USING WELDOLETS :

- (a) Funneled inlet provides full fluid flow
- (b) Wide footing improves mechanical strength & provides rugged construction.
- (c) Wherever back welding or reinforced branches (saddles, reinforcing pads) are required.

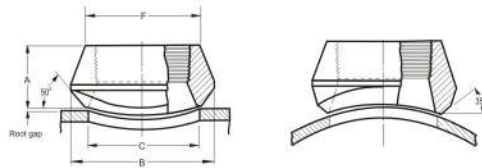
TEMPERATURE/PRESSURE RATINGS:

Weldolet welding fittings are rated the same as seamless steel pipe.
Header assemblies with full size and reducing branches constructed with weldolet welding fittings tested in accordance with the provisions of ASME B16.9 in all cases burst in the header pipe well above the computed minimum bursting strength of the straight run of unpenetrated pipe.



FORGED STEEL OUTLET FITTINGS THREDOLETS

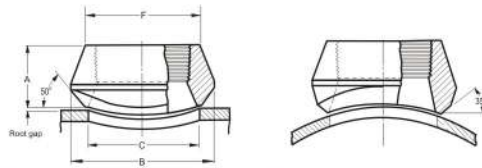
3000#, 6000#



Outlet Size	A		B		C	
	3000#	6000#	3000#	6000#	3000#	6000#
1/2	25.4	31.8	34.9	44.5	23.8	19.1
3/4	27.0	36.5	44.5	50.8	30.2	25.4
1	33.3	39.7	54.0	61.9	36.5	33.3
1 1/4	33.3	41.3	65.1	69.9	44.5	38.1
1 1/2	34.9	42.9	73.0	82.6	50.8	49.2
2	38.1	52.4	88.9	103.2	65.1	69.9
2 1/2	46.0	-	103.2	-	76.2	-
3	50.8	-	122.2	-	93.7	-
4	57.2	-	152.4	-	120.7	-

FORGED STEEL OUTLET FITTINGS SOCKOLETS

3000#, 6000#



Outlet Size	A		B		C	
	3000#	6000#	3000#	6000#	3000#	6000#
1/2	25.4	31.8	34.9	44.5	23.8	19.1
3/4	27.0	36.5	44.5	50.8	30.2	25.4
1	33.3	39.7	54.0	61.9	36.5	33.3
1 1/4	33.3	41.3	65.1	69.9	44.5	38.1
1 1/2	34.9	42.9	73.0	82.6	50.8	49.2
2	38.1	52.4	88.9	103.2	65.1	69.9
2 1/2	46.0	-	103.2	-	76.2	-
3	50.8	-	122.2	-	93.7	-
4	57.2	-	152.4	-	120.7	-

Applicable Run Pipe Sizes are From out-Let to 36"

For the 3000# and 6000# Sockolets and Thredolets, Inside Bore, Thread, Socket Bore and Socket depth Dimensions are According to ANSI B16.11

Pipe Schedule Numbers and Weight Designation are in Accordance With ANSI B36.10

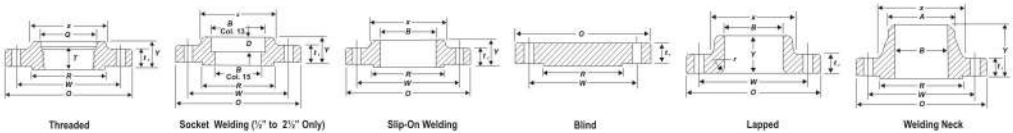
When Ordering Sockolets and Thredolets, Include The Quantity, Run and Out-Let Size, Item And Rating(or Schedule Number)and Material

FLANGES FITTINGS



BHAWAL STEEL AGENCY

AN ISO 9001 : 2008 CERTIFIED CO.



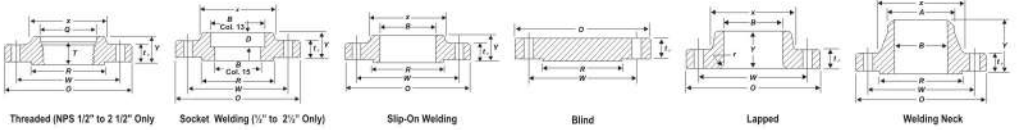
DIMENSIONS OF CLASS 150 FLANGES

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Nominal Pipe Size NPS	Outside Diameter of Flange o	Thickness of Flange, Min. t	Thickness Lap Joint Min. t	Drilling			Hub Diameter Beginning of Chamfer Welding Neck A	Length Thru Hub			Bore			Corner Radius of Bore of Lapped Flange and Pipe, R	Depth of Socket, D	Diameter of RF R		
				Diameter of Bolt Circle W	Diameter of Bolt Holes	Number of Bolts		Diameter of Hub, X	Threaded/ Slip-On/ Socket Welding, Y	Lapped, Y	Welding Neck, Y	Threaded/ Length Threaded Min. T	Slip-On/ Socket Welding, Min. B				Lapped Min. B	Welding Neck/ Socket Welding B [Note (2)]
1/2	90	9.6	11.2	60.3	15.9	4	30	21.3	14	16	46	16	22.2	22.9	15.8	3	10	34.9
3/4	100	11.2	12.7	6.9.9	15.9	4	38	26.7	14	16	51	16	27.7	28.2	20.9	3	11	42.9
1	110	12.7	14.3	79.4	15.9	4	49	33.4	16	17	54	17	34.5	34.9	26.6	3	13	50.8
1 1/4	115	14.3	15.9	88.9	15.9	4	59	42.2	19	21	56	21	43.2	43.7	35.1	5	14	63.5
1 1/2	125	15.9	17.5	98.4	15.9	4	65	48.3	21	22	60	22	49.5	50.0	40.9	6	16	73.0
2	150	17.5	19.1	120.7	19.1	4	76	60.3	24	25	62	25	61.9	62.5	52.5	8	17	92.1
2 1/2	180	20.7	22.3	139.7	19.1	4	90	73.0	27	29	68	29	74.6	75.4	62.7	8	19	104.8
3	190	22.3	23.9	152.4	19.1	4	108	88.9	29	30	68	30	90.7	91.4	77.9	10	21	127.0
3 1/2	215	22.3	23.9	177.8	19.1	8	122	101.6	30	32	70	32	103.4	104.1	90.1	10	....	139.7
4	230	22.3	23.9	190.5	19.1	8	135	114.3	32	33	75	33	116.1	116.8	102.3	11	....	157.2
5	255	22.3	23.9	215.9	22.3	8	164	141.3	35	36	87	36	143.8	144.4	128.2	11	....	185.7
6	280	23.9	25.4	241.3	22.3	8	192	168.3	38	40	87	40	170.7	171.4	154.1	13	....	215.9
8	345	27.0	28.6	298.2	22.3	8	246	219.1	43	44	100	44	217.5	222.2	202.7	13	....	269.9
10	4.5	28.6	30.2	362.0	25.4	12	3.5	273.0	48	49	100	49	276.2	277.4	254.6	13	....	323.8
12	845	3.2	31.8	431.8	25.4	12	365	323.8	54	56	113	56	327.0	328.2	304.8	13	....	381.0
14	535	33.4	35.0	476.3	28.6	12	400	355.6	56	79	125	57	359.2	360.2	....	13	....	412.8
16	595	35.0	36.6	539.8	28.6	16	457	406.4	62	87	125	64	410.5	411.2	To be Specified by Purchaser	13	....	469.9
18	635	38.1	39.7	577.9	31.8	16	505	457.0	67	97	138	68	461.8	462.3	....	13	....	533.4
20	700	41.3	42.9	635.0	31.8	20	559	508.0	71	103	143	73	513.1	514.4	....	13	....	584.2
24	815	46.1	47.7	749.3	35.0	20	663	610.0	81	111	151	83	616.0	616.0	....	13	....	692.2

DIMENSIONS OF CLASS 300 FLANGES

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Nominal Pipe Size NPS	Outside Diameter of Flange o	Thickness of Flange, Min. t	Thickness Lap Joint Min. t	Drilling			Hub Diameter Beginning of Chamfer Welding Neck A	Length Thru Hub			Bore			Corner Radius of Bore of Lapped Flange and Pipe, R	Counter-bore Threaded FLANGE Min., Q	Depth of Socket, D	Diameter of RF R		
				Diameter of Bolt Circle W	Diameter of Bolt Holes	Number of Bolts		Diameter of Hub, X	Threaded/ Slip-On/ Socket Welding, Y	Lapped, Y	Welding Neck, Y	Threaded/ Length Threaded Min. T	Slip-On/ Socket Welding, Min. B					Lapped Min. B	Welding Neck/ Socket Welding B [Note (2)]
1/2	95	12.7	14.3	66.7	15.9	4	38	21.3	21	22	51	16	22.2	22.9	15.8	3	23.6	10	34.9
3/4	115	14.3	15.9	82.6	19.1	4	48	26.7	24	25	56	16	27.7	28.2	20.9	3	29.0	11	42.9
1	125	15.9	17.5	88.9	19.1	4	54	33.4	25	27	60	18	34.5	34.9	26.6	3	35.8	13	50.8
1 1/4	135	17.5	19.1	98.4	19.1	4	64	42.2	25	27	64	21	43.2	43.7	35.1	5	44.4	14	63.5
1 1/2	155	19.1	20.7	114.3	22.2	4	70	48.3	29	30	67	23	49.5	50.0	40.9	6	50.3	16	73.0
2	165	20.7	22.3	127.0	19.0	8	84	60.3	32	33	68	29	61.9	62.5	52.5	8	63.5	17	92.1
2 1/2	190	23.9	25.4	149.2	22.3	8	100	73.0	37	38	75	32	74.6	75.4	62.7	8	76.2	19	104.8
3	210	27.0	28.6	168.3	22.3	8	117	88.9	41	43	78	32	90.7	91.4	77.9	10	92.2	21	127.0
3 1/2	230	28.6	30.2	184.2	22.3	8	133	101.6	43	44	79	37	103.4	104.1	90.1	10	104.9	....	139.7
4	255	30.2	31.8	200.0	22.3	8	146	114.3	46	48	84	37	116.1	116.8	102.3	11	117.6	....	157.2
5	280	33.4	35.0	235.0	22.3	8	178	141.3	49	51	97	43	143.8	144.4	128.2	11	144.4	....	185.7
6	320	35.0	36.6	269.9	22.3	12	206	168.3	51	52	97	47	170.7	171.4	154.1	13	171.1	....	215.9
8	380	39.7	41.3	330.2	25.4	12	260	219.1	60	62	110	51	221.5	222.2	202.7	13	222.2	....	269.9
10	445	46.1	47.7	387.4	28.6	16	321	273.0	65	95	116	56	276.2	277.4	254.6	13	276.2	....	323.8
12	520	49.3	50.8	450.8	31.8	16	375	323.8	71	102	129	61	327.0	328.2	304.8	13	328.6	....	381.0
14	585	52.4	54.0	514.4	31.8	20	425	355.6	75	111	141	64	359.2	360.2	....	13	360.4	....	412.8
16	650	55.6	57.2	571.5	35.0	20	483	406.4	81	121	144	69	410.5	411.2	To be Specified by Purchaser	13	411.2	....	469.9
18	710	58.8	60.4	628.6	35.0	24	533	457.0	87	130	157	70	461.8	462.3	....	13	462.0	....	533.4
20	775	62.0	63.5	685.8	35.0	24	587	508.0	94	140	160	74	513.1	514.4	....	13	512	....	584.2
24	915	68.3	69.9	812.8	41.3	24	702	610.0	105	152	167	83	616.0	616.0	....	13	614.4	....	692.2

NOTE: (1) Height of RF 2 mm
 (2) Dimension in Column 16 Correspond to the inside diameters of pipe as given in ASME B36.10M for Standard Wall pipe. Thickness of Standard Wall is the same as Schedule 40 in sizes NPS 10 and smaller. These bore sizes are furnished unless otherwise specified by the purchaser.



DIMENSIONS OF CLASS 600 FLANGES

1	2	3	Drilling				8	Length Thru Hub			Bore			16	17	18	19		
			4	5	6	7		9	10	11	12	13	14					15	
Nominal Pipe Size NPS	Outside Diameter of Flange O	Thickness of Flange, Min., t	Diameter of Hub, X	Diameter of Bolt Circle, W	Diameter of Bolt Holes, in.	Number of Bolts	Hub Diameter Beginning of Chamfer Welding Neck, A	Threaded/ Slip-On, Y	Lapped, Y	Welding Neck, Y	Threaded/ Length Threaded Flange Min., T	Slip-On Min., B	Lapped Min., B	Welding Neck, B	Corner Radius of Bore of Lapped Flange and Pipe, r	Counter-bore Threaded Flange Min., Q	Diameter of RF R	Socket Weld D	
1/2	95	14.3	38	66.7	15.9	4	21.3	22	22	52	16	22.2	22.9	To be Specified by Purchaser	3	23.6	10	34.9	
3/4	115	15.9	48	82.6	19.1	4	26.7	25	25	57	16	27.7	28.2		3	29.0	11	42.9	
1	125	17.5	54	88.9	19.1	4	33.4	27	27	62	18	34.5	34.9		3	35.8	13	50.8	
1 1/4	135	20.7	64	98.4	19.1	4	42.2	29	29	67	21	43.2	43.7		5	44.4	14	63.5	
1 1/2	155	22.3	70	114.3	22.3	4	48.3	32	32	70	23	49.5	50.0		6	50.6	16	73.0	
2	165	25.4	84	127.0	19.1	8	60.3	37	37	73	29	61.9	62.5		8	63.5	17	92.7	
2 1/2	190	28.6	100	149.2	22.3	8	73.0	41	41	79	32	74.6	75.4		8	76.2	19	104.8	
3	210	31.8	117	168.3	22.3	8	88.9	46	46	83	35	90.7	91.4		10	92.2	21	127.0	
4	230	35.0	133	184.2	25.4	8	101.6	49	49	86	40	103.4	104.1		10	104.9	.....	139.7
5	330	44.5	189	266.7	28.6	8	141.3	60	60	114	48	143.8	144.4		To be Specified by Purchaser	11	144.4	185.7
6	355	47.7	222	291.1	28.6	12	168.3	67	67	117	51	170.7	171.4			13	171.4	215.9
8	420	55.6	273	349.2	31.8	12	219.1	76	76	133	58	221.5	222.2			13	222.2	269.9
10	510	63.5	343	431.8	35.0	16	273.0	86	111	152	66	276.2	277.4			13	276.2	323.8
12	560	66.7	400	489.0	35.0	20	323.8	92	117	156	70	327.0	328.2			13	328.6	381.0
14	605	69.9	432	527.0	38.1	20	355.6	94	127	165	74	359.2	360.2			13	360.4	412.8
16	605	76.2	495	603.2	41.3	20	406.4	106	140	178	78	410.5	411.2			13	411.2	469.9
18	745	82.6	546	654.0	44.5	20	457.0	117	152	184	80	461.8	462.3			13	462.0	533.4
20	815	88.9	610	723.9	44.5	24	508.0	127	165	190	83	513.1	514.4		13	512.8	.....	584.2
24	940	101.6	718	838.2	50.8	24	610.0	140	184	203	93	616.0	616.0		13	614.4	.....	692.2

Note : (1) Height of RF 7mm

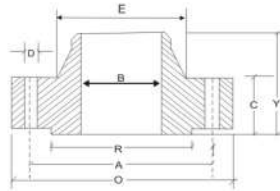
DIMENSIONS OF CLASS 900 FLANGES

1	2	3	Drilling				8	Length Thru Hub			Bore			16	17	18	19			
			4	5	6	7		9	10	11	12	13	14					15		
Nominal Pipe Size NPS	Outside Diameter of Flange O	Thickness of Flange, Min., t	Diameter of Hub, X	Diameter of Bolt Circle, W	Diameter of Bolt Holes, in.	Number of Bolts	Hub Diameter Beginning of Chamfer Welding Neck, A	Threaded/ Slip-On, Y	Lapped, Y	Welding Neck, Y	Threaded/ Length Threaded Flange Min., T	Slip-On Min., B	Lapped Min., B	Welding Neck, B	Corner Radius of Bore of Lapped Flange and Pipe, r	Counter-bore Threaded Flange Min., Q	Diameter of RF R	Socket Weld D		
1/2	120	22.3	38	82.6	22.3	4	21.3	32	32	60	23	22.2	22.9	To be Specified by Purchaser	3	23.6	349	10		
3/4	130	25.4	44	88.9	22.3	4	26.7	35	35	70	26	27.7	28.2		3	29.0	42.9	11		
1	150	28.6	52	101.6	25.4	4	33.4	41	41	73	29	34.5	34.9		3	35.8	50.8	13		
1 1/4	160	28.6	64	111.1	25.4	4	42.2	41	41	73	31	43.2	43.7		5	44.4	63.5	14		
1 1/2	180	31.8	70	123.8	28.6	4	48.3	44	44	83	32	49.5	50.0		6	50.6	73.0	16		
2	215	38.1	105	165.1	25.4	8	60.3	57	57	102	39	61.9	62.5		To be Specified by Purchaser	8	6.5	92.1	17	
2 1/2	215	41.3	124	190.5	28.6	8	73.0	64	64	105	48	74.6	75.4			8	76.2	104.8	19	
3	240	38.1	127	190.5	25.4	8	88.9	54	54	102	42	90.7	91.4			10	92.2	127.0	
4	290	44.5	159	235.0	31.8	8	114.3	70	70	114	48	116.1	116.8			11	117.6	139.7	
5	350	50.8	190	279.4	35.0	8	141.3	79	79	127	54	143.8	144.4			To be Specified by Purchaser	11	144.4	185.7
6	380	55.6	235	317.5	31.8	12	168.3	86	86	140	58	170.7	171.4				13	171.4	215.9
8	470	63.5	298	393.7	38.1	12	219.1	102	114	162	64	221.5	222.2				13	222.2	269.9
10	545	69.9	368	469.9	38.1	16	273.0	108	127	184	72	276.2	277.4				13	276.2	323.8
12	610	79.4	419	533.4	38.1	20	323.8	117	143	200	77	327.0	328.2		13		328.6	381.0	
14	640	85.8	451	558.8	41.3	20	355.6	130	156	213	83	359.2	360.2		13		360.4	415.8	
16	705	88.9	508	616.0	44.5	20	406.4	133	165	216	86	410.5	411.2		13		411.2	469.9	
18	785	101.6	565	685.8	50.8	20	457.0	152	190	229	89	461.8	462.3		13		462.0	533.4	
20	855	108.0	622	749.3	54.0	20	508.0	159	210	248	93	513.1	514.4		13	512.8	584.2	.....	
24	1,040	139.7	749	901.7	66.7	20	610.0	203	267	292	102	616.0	616.0		13	614.4	692.2	.....	

Note : (1) Height of RF 7mm



WELDING NECK FLANGE BORES (B)



WELDING NECK FLANGE

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	13.8	-	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.

ANSI FLANGE WEIGHTS (Kgs.)

N. P. Size	150 Lb		300 Lb		600 Lb		900 Lb	
	WN	SO	WN	SO	WN	SO	WN	SO
1/2"	0.7	0.4	0.8	0.7	0.9	0.8	1.9	1.8
3/4"	0.9	0.7	1.4	1.2	1.6	1.4	2.7	2.5
1"	1.1	0.8	1.7	1.4	1.9	1.7	3.9	3.6
1 1/4"	1.5	1.2	2.2	1.8	2.6	2.1	4.5	4.1
1 1/2"	1.8	1.4	3.2	2.7	3.5	3.1	6.2	5.6
2"	2.7	2.2	3.6	3.2	4.7	3.8	11.3	10.3
2 1/2"	4.4	3.5	5.5	4.5	6.7	5.5	15.5	14.3
3"	5.1	4.1	7.3	6.1	8.7	7.3	15	12.3
3 1/2"	6.4	5.2	9	7.5	11.2	8.9	-	-
4"	7.5	5.6	11.9	10	18.3	15.8	24	20.5
5"	9	6.3	16	12.5	30.5	25	37.5	33.5
6"	11	7.8	20	16.2	37	29.5	50	43
8"	18.5	12.6	31	25	55	44	85	74
10"	25	18	44.3	35	91	71	125	105
12"	38	27.5	64	50	108	85	165	136
14"	51	37	88	72	150	96	198	158
16"	63	46	112	90	180	145	224	184
18"	71	50	138	115	240	175	320	258
20"	88	64	171	137	295	220	375	316
24"	120	90	240	210	363	315	680	608



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. 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

S.S. FORGED BLIND HEX TEE



S.S. FORGED BLIND HEX ELBOW



S.S. ELBOW 45 DEGREE



S.S. CROSS



9.5MM A/F (E)	22MM /A/F(E)	12.5MM A/F (E)	24MM A/F (M)	14.2MM A/F
12.5MM A/F (E)	22MM A/F (M)	14MM A/F (M)	SIZE : 24MM A/F NPT	17MM A/F
14MM A/F (E)	22MM A/F NPT	14MM A/F EXTRA LONG	SIZE : 24MM A/F (E)	22MM A/F
14MM A/F EXTRA LONG	24MM A/F (E)	15MM A/F (M)	27MM A/F (E)	14MM A/F
15MM A/F (E)	27MM A/F (E)	16MM A/F NPT	27MM A/F (M)	15.5MM A/F
16MM A/F (M)	27MM A/F (M)	17.5MM A/F(M)	27MM A/F NPT	20.5MM A/F
16MM A/F NPT	27MM A/F NPT	19MM A/F NPT	32MM A/F (E)	
17MM A/F(E)	32MM A/F (E)	19MM A/F (M)	36MM A/F (M)	Sizes
19MM A/F (E)	36MM A/F (E)	20.5MM A/F(E)	36MM A/F NPT	
19MM A/F NPT	36MM A/F (M)	22MM A/F (M)	SIZE : 12.5MM A/F R/S	
20.5MM A/F(E)	41MM A/F (E)	22MM A/F EXTRA LONG	SIZE : 22MM A/F R/S	



S. S. FERRULE (FRONT & BACK) & NUTS



SIZE : 1/16 " OD	SIZE : 4MM OD
SIZE : 1/8 " OD	SIZE : 6MM OD
SIZE : 3/8 " OD	SIZE : 8MM OD
SIZE : 1/4 " OD	SIZE : 10MM OD
SIZE : 5/16 " OD	SIZE : 12MM OD
SIZE : 1/2 " OD	SIZE : 16MM OD
SIZE : 5/8 " OD	SIZE : 18MM OD
SIZE : 3/4 " OD	SIZE : 20MM OD
SIZE : 1 " OD	SIZE : 25MM OD

S. S. NECK RING

Single Brading
(All Dimensions are in mm)

1/4"	17.2 X 14.5 X 20
3/8"	21.3 X 18 X 20
1/2"	23 X 20 X 20
5/8"	28 X 25 X 20
3/4"	31 X 28 X 25
1"	42 X 38 X 25
1 1/4"	48.3 X 45 X 30
1 1/2"	58 X 55 X 30
2"	71 X 68 X 35
2 1/2"	89 X 85 X 35
3"	103 X 99 X 40
4"	121 X 125 X 40

Double Brading
(All Dimensions are in mm)

1/4"	19 X 16 X 20
3/8"	22 X 19 X 20
1/2"	24 X 21 X 20
5/8"	30 X 26 X 20
3/4"	33.4 X 30 X 25
1"	4.5 X 40 X 25
1 1/4"	50.8 X 47 X 30
1 1/2"	60.3 X 57 X 30
2"	74 X 70 X 35
2 1/2"	92 X 88 X 35
3"	106 X 102 X 40
4"	127 X 124 X 50



 Gauge Cock	 Needle Valve	 Snnuber	 Thermowells
 Gauge Glass Cock Valve	 Manifold Valve	 Air Header	

OTHER PRODUCTS

 Socket Weld Tee / Elbow	 Fasteners	 Condensate Pot	 Long Weld Neck Flange	 Outlet Fittings
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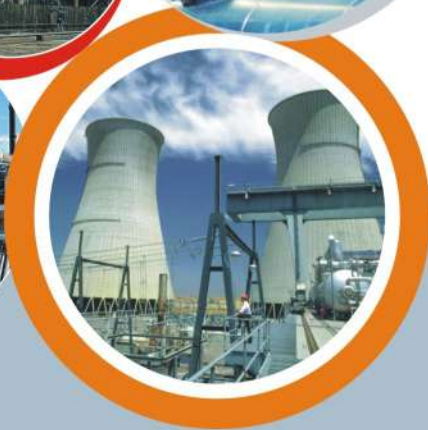
**FORMULA OF CALCULATING WEIGHT****WEIGHT OF STAINLESS STEEL / CARBON STEEL PIPES & TUBES**
$$\text{OD (mm) - W.T. (mm) X W.T. (mm) X 0.02466 = KG. / MTR.}$$
WEIGHT OF STAINLESS STEEL SHEETS
$$\text{Length (mtr) x Width (mtr) x Thk. (mm) x 8 = WT. PER PC}$$
WEIGHT OF CARBON STEEL SHEETS
$$\text{Length (mm) x Width (mm) x Thk. (mm) x 7.85 = WT. PER PC}$$
WEIGHT OF STAINLESS STEEL CIRCLE & BLANKS
$$\text{O.D. (mm) x O.D. (mm) x Thk. (mm) / 160/1000 = KG./PCS.}$$
WEIGHT OF STAINLESS STEEL ROUNDS
$$\text{Dia. (mm) x Dia. (mm) x 0.00623 = KG. / MTR.}$$
WEIGHT OF STAINLESS STEEL HEXAGONAL RODS
$$\text{Dia. (mm) x Dia. (mm) x 0.00679 = KG. / MTR.}$$
WEIGHT OF STAINLESS STEEL SQUARE RODS
$$\text{Dia. (mm) x Dia. (mm) x 0.00787 = KG. / MTR.}$$
WEIGHT OF COPPER PIPES
$$\text{O.D. (mm) - W.T. (mm) x W.T. (mm) x 0.0285 = KG. / MTR.}$$
WEIGHT OF ALUMINUM PIPES
$$\text{O.D. (mm) - W.T. (mm) x W.T. (mm) x 0.0282 = KG. / MTR.}$$
WEIGHT OF ALUMINUM SHEETS
$$\text{Length (mtr.) x Width (mtr.) x Thk. (mm) x 2.66 = KG. / SHEET}$$
WEIGHT OF LEAD SHEETS
$$\text{Length (mtr.) x Width (mtr.) x Thk. (mm) x 11.2 = KG. / MTR.}$$
SHEET WIDTH REQD. FOR ROLLED & WELDED PIPES
$$\text{O.D. (mm) - Thk. (mm) x 3.14 = SHEET WIDTH (mm)}$$
WEIGHT FOR SQUARE / RECTANGLE PIPES
$$\text{Length from 4 Angle (OD) / 3.14 - Thk. (mm) x Thk. (mm) x 0.00756} \\ \text{= KG. / PER FEET}$$
WEIGHT FOR CONVERSION OF MTR. TO FEET
$$\text{Weight of 1 Mtr. } \div \text{ 3.2808 = Feet}$$
FORMULA FOR HEALTHY BUSINESS

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



APPLICATION INDUSTRIES

- OIL & GAS INDUSTRIES
- PHARMACY INDUSTRIES
- STEEL & POWER
- ENGINEERING
- CEMENT INDUSTRIES
- REFINERY PLANTS
- SHIPBUILDING
- FIRE FALLING SYSTEMS
- CHEMICAL
- FERTILIZERS
- PAPER & PULP MILLS
- SUGAR INDUSTRIES
- WATER PIPING SYSTEMS
- BEVERAGE INDUSTRIES



Industries We Serve

Automobile



Exhaust Systems
Decorative Items

Pipe & Tube



Ornamental
Auto
Industrial Press Pipe
Heat Exchanger Tubing
Precision Tubing

Railway



Wagons
CRF
Wagon-Refurbishing
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