



The most  
**RELIABLE**  
name in  
**STEEL**

**Manufacturer of :**

- Pipe Fitting
- Flanges
- Socketweld Fittings
- Dairy Fittings
- Instrument Fittings





**METALLIC**<sup>TM</sup>  
**STEEL & ENGINEERING**  
AN ISO 9001:2015 CERTIFIED CO.

## Company Profile



**Metallic Steel & Engineering** is one of the leading Manufacturer of Pipe Fittings & Flanges, Extensive Stockholder & Distributor of Industrial Piping products for the Oil & Gas, Food Processing, Dairy, Breweries, Pharmaceuticals, Power Generation, Petrochemical & Nuclear Industries operating in National & International Markets.

**Metallic Steel & Engineering** is in the business of Manufacturing of Flanges, Butt weld & Seamless Pipe Fittings, Dairy Fittings, Forged Fittings and Trading/Supplying of Bars, Rods, Wires, Sheets, Plates, Coils, Valves, Fasteners etc. in the materials like Stainless steel, Duplex & Super Duplex Steel, Carbon Steel, Alloy Steel, Super Alloys, Non-Ferrous Metal & Alloys, High Performance Nickel Alloys & Copper Alloys. We also Manufacture and Supply Non-Standard Items in any Material to Customer's Specifications.

We are committed to serve your Organization's Sourcing Needs of the above Products with our Quality Products as well as our Service, which is further Strengthened by our well-established in-house infrastructure Capabilities and Capacities plus comprehensive stock of raw material and finished products. We are growing organization having strong work force of skilled, experienced and qualified employees.

We hope the information provided is useful to you & will forward us your regular enquiries and Requirements. All our Materials we supply carry Test Certificates along with Materials.

## Quality Policy



Quality is our prime concern. We are able to maintain high quality standards through our committed personnel and sound infrastructure. We ensure that finest quality material is used for our products. For ensure the quality of each material, we are providing Materials Test Certificate along with supply. Our team of experts maintain a vigil on the quality of the products. Every single pieces have marking with test certificates and reports. We are continually improving our quality to serve our clients better.

### Quality Objectives :

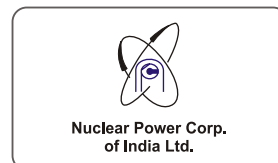
We consider three elements to be essential for the overall quality of the company services

- Independence & Objectivity
- Technical & Scientific Quality
- Practical Benefits to Clients

## Third Party Inspection



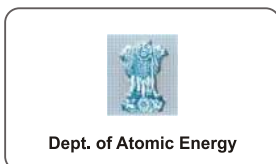
Larsen & Toubro Ltd.



Nuclear Power Corp.  
of India Ltd.



IBR  
Approved



Dept. of Atomic Energy



Electromech Engg.



TUV  
INDIA



DET NORSKE VERITAS



TATA  
TATA Project



BUREAU  
VERITAS



Lloyd's  
Register



RITES





## Butt-Weld Fittings



**Stainless Steel:** ASTM A312 TP 304 / 304L / 304H / 316 / 316L / 316H / 317 / 317L / 321 / 321H / 310 / 347 / 347H / 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 / AISI 4130 / AISI 4140

**Others:** Duplex, Super Duplex, Inconel, Monel Hastelloy, Nickel, Alloy 20, 254 SMO, 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.



## Forged Fittings



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

**Carbon Steel :** ASTM A105 / A350 LF2, etc.

**Alloy Steel:** ASTM A182 F1 / F5 / F9 / F11 / F22 / F91 / AISI 4130 / AISI 4140

**Others:** Duplex, Super Duplex, Inconel, Monel Hastelloy, Nickel, Alloy 20, 254 SMO, 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, Elbolet, Sockolet, Thredolet, Nipolet, Latrolet, etc.

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

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



## Flanges



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

**Carbon Steel:** ASTM A105 / A350 LF2, etc.

**Alloy Steel:** ASTM A182 F1 / F5 / F9 / F11 / F22 / F91 / AISI 4130 / AISI 4140

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

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

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

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





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

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

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

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



## Round Bars



**Stainless Steel Bar** : ASTM A-479, A 182 F 304/304H/304L, 316/316L/316Ti, 309, 310, 317L, 321, 347, 409, 410, 420, 430, 440 (A, B, C) 446, 904L, etc. **SUPER 13 CR, 420 MOD, TOUGHMET 3AT 110**

**Duplex Steel Bar** : A 182 F51, F53, F55

**Carbon Steel Bar** : A 105, LF2, 4140 MOD, 4340 MOD

**Alloy Steel Bar** : ASTM A -182 F11, F12, F22, FF5, F9, F91

**Cu-Ni Bar** : C70660 (90:10) C71500 (70:30), C71640

**Nickel Bar** : UNS N02200, N02201

**Monel Bar** : UNS N04400, N05500

**Inconel Bar** : UNS N06600, N06601, N06625, N08800, N08810, UNS N08825, UNSN09925, UNS N07718

**Types** : Round, Square, Hex ( A/F), Rectangle

## 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** : Vane Condition, Galvanized, Phosphetised, Cadium Plated, Hot Deep Galvanized, Bloodied, Nickel Chrome Plated etc.

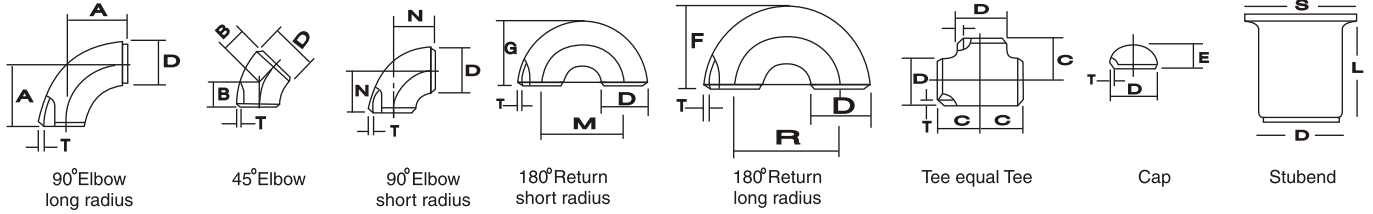
**Non Ferrous Metal** : Copper, Brass, Aluminium, Titanium, Nichrome, Al. Bronze Phosphorous Bronze, etc.

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





**DIMENSION OF BUTT WELD FITTINGS ANSI B-16.9 / B-16.29**

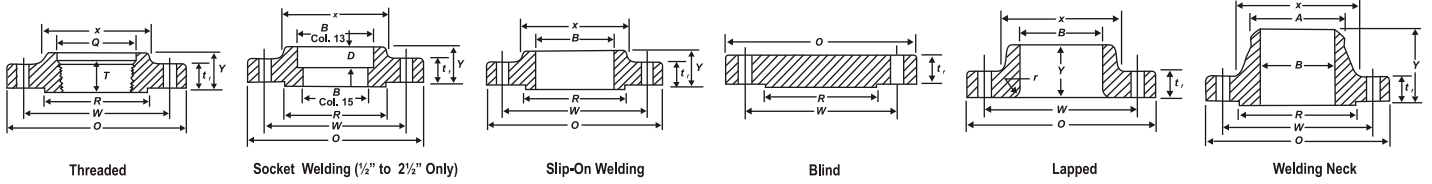


Nominal Pipe Size		Outside Diameter	Center to Face				Back to Face			Center to Center		Length 'L'		
INCH	MM	D	A R=1.5D	B	C	N R=1D	E	F	G	R	M	S	Short L	Long L
1/2	15	21.3	38.00	16.0	25.0	-	25.0	48.0	-	76.0		35.0	50.8	76.2
3/4	20	26.7	29.00	11.0	29.0	-	25.0	43.0	-	57.0		43.0	50.8	76.2
1	25	33.4	38.00	22.0	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	73.0	95.25	44.0	76.0	64.0	38.0	132.0	100.0	191.0	127.0	105.0	63.5	152.4
3	80	88.9	114.30	51.0	86.0	76.0	51.0	159.0	121.0	229.0	152.0	127.0	63.5	152.4
3.1/2	90	101.6	133.35	57.0	95.0	89.0	54.0	184.0	140.0	267.0	175.0	140.0	76.2	152.4
4	100	114.3	152.0	64.0	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	152.4
6	150	168.3	229.0	95.0	143.0	152.0	102.0	313.0	237.0	457.0	305.0	218.0	88.9	203.2
8	200	219.1	305.0	127.0	178.0	203.0	89.0	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	102.0	515.0	391.0	762.0	508.0	324.0	127.0	254.0
12	300	323.8	457.0	190.0	254.0	305.0	127.0	619.0	467.0	914.0	610.0	381.0	152.4	254.0
14	350	355.6	533.0	222.0	279.0	358.0	152.0	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	165.0	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	178.0	914.0	686.0	1372.0	914.0	533.0	152.4	305.0
20	500	508.0	762.0	318.0	381.0	508.0	203.0	1016.0	762.0	1524.0	1016.0	584.0	152.4	305.0
22	550	559.0	838.0	343.0	419.0	559.0	229.0	1118.0	838.0	1676.0	1118.0	614.4	152.4	305.0
24	600	610.0	914.0	381.0	432.0	610.0	254.0	1219.0	914.0	1629.0	1219.0	692.0	152.4	305.0
26	650	660.0	991.0	405.0	495.0	660.0	267.0							
28	700	711.0	1067.0	438.0	521.0	771.0	267.0							
30	750	762.0	1143.0	470.0	559.0	762.0	267.0							
32	800	813.0	1219.0	502.0	597.0	813.0	267.0							
34	850	864.0	1295.0	533.0	635.0	864.0	267.0							
36	900	914.4	1372.0	565.0	673.0	914.0	267.0							



All Dimension in Millimeters





**DIMENSIONS OF CLASS 150 FLANGES ANSI B 16.5**

1	2	3	4	Drilling			8	9	Length Thru Hub			13	Bore			17	18	19
				5	6	7			10	11	12		14	15	16			
Nominal Pipe Size NPS	Outside Diameter of Flange o	Thickness of Flange, Min., t <sub>f</sub>	Thickness Lap Joint Min., t <sub>l</sub>	Diameter of Bolt Circle W	Diameter of Bolt Holes	Number of Bolts	Diameter of Hub, X	Hub Diameter Beginning of Chamfer Welding Neck A	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)]	Corner Radius of Bore of Lapped Flange and Pipe, R	Depth of Socket, D	Diameter of RF R
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	69.9	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	78	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	221.5	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	....	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 ANSI B 16.5**

1	2	3	4	Drilling			8	9	Length Thru Hub			13	Bore			17	18	19	20
				5	6	7			10	11	12		14	15	16				
Nominal Pipe Size NPS	Outside Diameter of Flange o	Thickness of Flange, Min., t <sub>f</sub>	Thickness Lap Joint Min., t <sub>l</sub>	Diameter of Bolt Circle W	Diameter of Bolt Holes	Number of Bolts	Diameter of Hub, X	Hub Diameter Beginning of Chamfer Welding Neck A	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)]	Corner Radius of Bore of Lapped Flange and Pipe, R	Counter-bore Threaded FLANGE Min., Q	Depth of Socket, D	Diameter of RF R
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	....	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.



**STAINLESS STEEL PIPE DIMENSION**

STAINLESS STEEL PIPE DIMENSION AS PER ASTM WEIGHT - KG. MTR. (ANSI B 36.19 - 1965)														
Nominal Bore		Outside Diameter	Sch 5S		Sch 10S		Sch 40S		Sch 80S		Sch 160S		Sch XXS	
mm	INCH	mm	Wt mm	Weight (Kg/mt)	Wt mm	Weight (Kg/mt)	Wt mm	Weight (Kg/mt)	Wt mm	Weight (Kg/mt)	Wt mm	Weight (Kg/mt)	Wt mm	Weight (Kg/mt)
3	1/8	10.3	1.24	0.276	1.24	0.28	1.73	0.37	2.41	0.47	-	-	-	-
6	1/4	13.7	1.24	0.390	1.65	0.49	2.24	0.631	3.02	0.80	-	-	-	-
10	3/8	17.1	1.24	0.490	1.65	0.63	2.31	0.845	3.20	1.10	-	-	-	-
15	1/2	21.3	1.65	0.800	2.11	1.00	2.77	1.27	3.75	1.62	4.75	1.94	7.47	2.55
20	3/4	26.7	1.65	1.03	2.11	1.28	2.87	1.68	3.91	2.20	5.54	2.89	7.82	3.63
25	1	33.4	1.65	1.30	2.77	2.09	3.38	2.50	4.55	3.20	6.35	4.24	9.09	5.45
32	1 1/4	42.2	1.65	1.65	2.77	2.70	3.56	3.38	4.85	4.47	6.35	5.61	9.70	7.77
40	1 1/2	48.3	1.65	1.91	2.77	3.11	3.68	4.05	5.08	5.41	7.14	7.25	10.16	9.54
50	2	60.3	1.65	2.40	2.77	3.93	3.91	5.44	5.54	7.48	8.74	11.1	11.07	13.44
65	2 1/2	73.0	2.11	3.69	3.05	5.26	5.16	11.30	7.01	11.4	9.53	14.9	14.2	20.39
80	3	88.9	2.11	4.51	3.05	6.45	5.49	11.30	7.62	15.2	11.1	21.3	15.24	27.65
100	4	114.3	2.11	5.84	3.05	8.36	6.02	16.07	8.56	22.3	13.49	33.54	17.12	41.03
125	5	141.3	2.77	9.47	3.40	11.57	6.55	21.80	9.53	31.97	15.88	49.11	19.05	57.43
150	6	168.3	2.77	11.32	3.40	13.84	7.11	28.30	10.97	42.7	18.2	67.56	21.95	79.22
200	8	219.1	2.77	14.79	3.76	19.96	8.18	42.60	12.7	64.6	23.0	111.2	22.23	107.8
250	10	273.1	3.40	22.74	4.19	28.00	9.27	60.50	15.1	96.0	28.6	173.0	25.40	155.14
300	12	323.9	3.96	31.50	4.57	36.00	10.30	79.80	17.5	132.0	33.32	238.76	25.40	189.97
350	14	355.6	3.96	34.36	4.78	41.3	11.13	94.59	19.05	158.08	35.71	281.70	-	-
400	16	406.4	4.19	41.56	6.35	62.64	12.7	123.30	21.41	203.33	40.46	365.11	-	-
450	18	457.2	4.19	46.80	4.78	52.42	14.27	155.80	23.8	254.36	45.71	466.40	-	-
500	20	508.0	4.78	59.25	5.54	68.71	15.09	183.42	26.19	311.2	49.99	564.68	-	-
600	24	609.6	5.54	82.47	6.35	94.45	17.48	255.41	30.96	442.08	59.54	808.22	-	-

**GENERAL TOLERANCE**

**1. Facings**

Required tolerances for various flange and flanged fitting facing are as follows :

- 1.1 Inside and outside diameter of large and small tongue and Groove and female, ±0.5mm
- 1.2 Outside diameter, 2.0 mm Raised face, ±1.0 mm
- 1.3 Outside diameter, 7.0 mm Raised face, ±0.5 mm

**2. Flange Thickness**

Required tolerances for flanges thickness are as follows.

- NPS ≤ 18 +3.0, -0.0 mm
- NPS ≥ 20 +5.0, -0.0 mm

The plus tolerances is applicable to bolting bearing surfaces whether as-forged, as-cast, spot-faced or backfaced

**3. Welding End Flange Ends and Hubs**

**3.1 Outside Diameter,** Required tolerances for the nominal outside diameter dimension A of figs. Welding end of welding neck flanges are as follow:

- NPS ≤ 5 +2.0, -1.0 mm
- NPS ≥ 6 +4.0, -1.0 mm

**3.2 Inside Diameter,** Required tolerances for the nominal outside diameter of welding ends of welding neck flanges and smaller bore of socket welding flanges (dimension B in the referenced figures) are as follows.

- NPS ≤ 10 ± 1.0 mm
- 12 ≤ NPS ≤ 18 ± 1.5 mm
- NPS ≥ 20. + 3.0, -1.5 mm

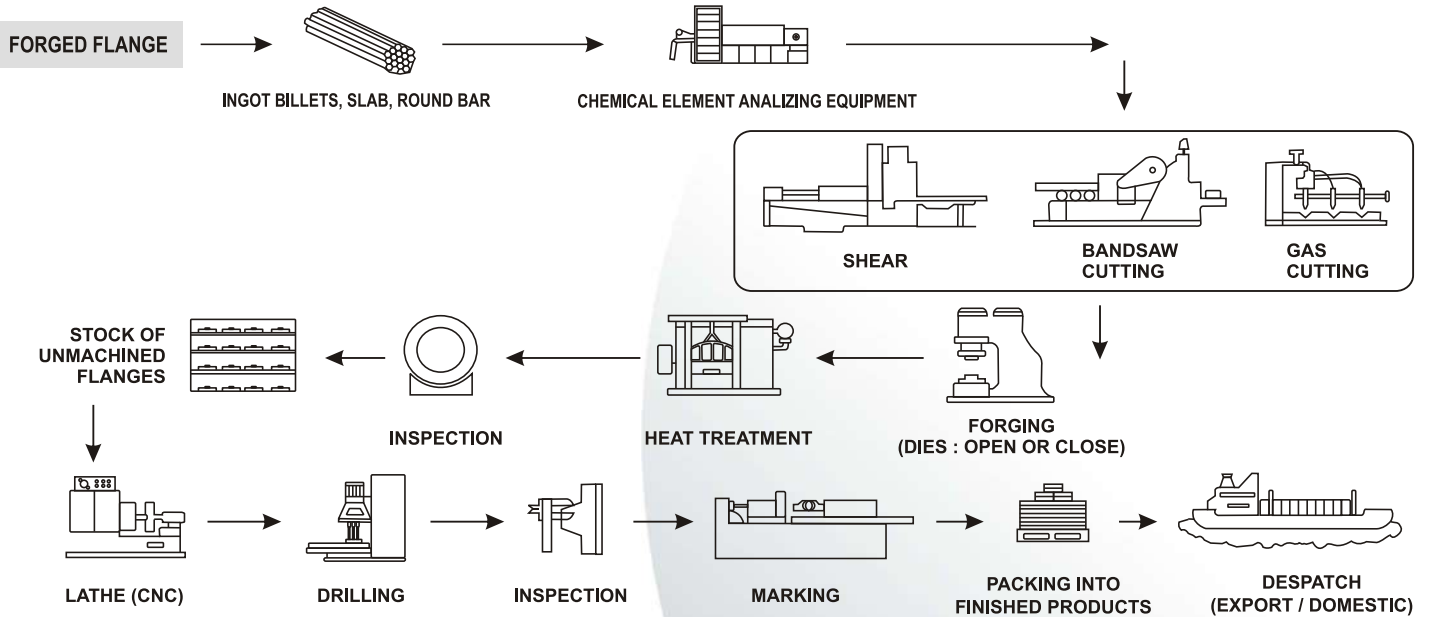
**3.3 Hub Thickness,** Despite the tolerances specified for dimensions A and B, the thickness of the hub at the welding end shall not be less 87 1/2 of % the nominal thickness of the pipe, having an under tolerance of 12.5% for the pipe wall thickness to which the flanges is to be attached, or the minimum wall thickness as specified by the purchaser

**4.0 Length Through Hub on Welding Neck Flanges**

The required tolerances for the length through hubs on welding neck flanges are as follows.

- NPS ≤ 4 ± 1.5 mm
- 5 ≤ NPS ≤ 10 ± 1.5 mm, -3.0 mm
- NPS ≥ 12. + 3.0 mm, -5.0 mm

## SCHEMATIC DETAILS OF PRODUCTION PROCESS FOR FLANGES



### Application Industries



- Pharmacy Industries
- Chemical Industries
- Shipyard Industries
- Cement Industries
- Oil & Gas Industries
- Textile Industries
- Paper & Pulp Mills
- Dairy Industries
- Nuclear & Thermal Power



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