



SIAG (E)

ISO 9001:2015, ISO 14001:2015, ISO 45001:2018
& PED 2014/68/EU Manufacturing Certified
Company



Pipe Fittings,
Non-Ferrous
Metal etc.

PIPE FITTINGS



Eckhardt[®]
Steel & Alloys

Technical Guide
Version 6.0



Eckhardt[®]
Steel & Alloys

ISO 9001:2015, ISO 14001:2015,
ISO 45001:2018 & PED 2014/68/EU
Certified Manufacturing Company

One Stop Solution

About ECKHARDT

"Many factors combine to archive the success of business i.e. the right product mix, a broad knowledge of products & their application, good business relationships, logistics & financials expertise, proximity to the customer and last but not the least the appropriate range of support service. At 'Eckhardt', all these have been combined to create a new dimension."

Formed by a group of young professionals Eckhardt is one of the leading Manufacturer & Exporter of Stainless Steel, Carbon Steel, Alloy Steel, Nickel Alloys, Aluminum, Copper, Cupro Nickel, Brass, Phosphorus Bronze, Lead, Zinc, Monel[®], Inconel[®], Hastalloy[®] & other Ferrous and Non Ferrous Metals in form of :

Pipes & Tubes, Line Pipes OCTG & Drill Pipes : In Seamless and Welded in all Grades (IBR & NON IBR),

Buttwelded Pipe Fittings, Socket welded, Screwed Fittings : Such as Elbow, Return Bend, Straight and Reducing Tee, Crosses, Lap Joint Stubend, Reducers, Unions, Caps, Bush, Plug, Nipples, Couplings, Threadolets, Weldolets Elbowlets etc.

Flanges & Forging : Such WNRF, SORF, SOFF, BLRF, SWRF, LAP JOINT, WNRTJ, BLRTJ, SPECTACLE BLIND, SPADE etc.

Tube Fitting & Ferrules Fittings; Hose assembly & hydraulic Fittings

Long Radius Bends : 1/2" NB to 32" NB in 5mm to 50mm Thk RADIUS 2, 5 D / 3D / 5D / 10D UPTO 22D For Pig Launching stream & general Purpose Fittings.

Plate / Sheet / Coils / Round Bars : CromeMoly (SA387 Gr. 11/22/91/5) Nickel & Nickel Alloys / Mild Steel / Boiler Quality / Corten / Hardox / Dillidur 400v / Sailma / Ship Building with class approval etc.

Fasteners & Gaskets : Such as nuts, Bolts, studs, washers, Valves & all project reuriment at one stop etc.

We are approved suppliers to various Govt. Departments & public sector all over the country & abroad regularly supplying to them for a long time. We have got ready stock of the above items in various sizes as per National / International Standards and specification and the same shall be supplied as per your requirements at very reasonable rates. We can arrange any third party inspection agency like LRS, DNV-GL, ABS, IRS, IBR, TUV, BVQI, RINA, MECON, TCS, PDIL, GOLF, LLOYDS etc.

Quality Policy

"We at ECKHARDT STEEL & ALLOYS, Manufacturers, Exporter of Ferrous and Non Ferrous metals in the Form of Pipes, Tubes, Pipe Fittings, Flanges, Sheets, Plates & Rods are Committed to Increase our market share by satisfying Our customers Requirements through offering Products at Best Prices, on timely Delivery and Better Support. We shall Continually Improve in Knowing our customer needs and Proactively acting on things required to satisfy the same."



The quality assurance system assures every product to go through the following Quality systems.

- Material Control System
- Certification & Supplementary Test
- Process Control System
- Machining & Dimensional Control
- Finishing & Marking & Packing

As we are very much interested to do business with you on long term basis, we request you to please enlist our name in your approved vendor list and send us your valued purchase inquire from time to so as to enable us to our most competitive rates and terms.



PRODUCT RANGE



Pipes :-

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/ A333 Gr.3/ Gr.6 etc.

Alloy Steel : ASTM A335 GR. P1/ P5/ P9/ P11/ P22/ P91/ P92 etc.

High Nickel Alloys : Monel[®], Nickel, Inconel[®], Hastelloy[®], Copper, Brass, Bronze, Titanium, Tantalum, Bismuth, Aluminium, High Speed Steel, Zinc, Lead etc.

Types : Round , Square, Rectangular.

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

Wall Thickness : Sch. 5S to Sch. XXS

Size : 1/4" OD to 6"OD

Wall Thickness : 22SWG to 10SWG



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 / WP92 etc.

Duplex & Super Duplex Steel : UNS S31803, UNS S32750, UNS S32760, 904L, Alloy 20, 254 SMO

High Nickel Alloy : Monel[®], Nickel, Inconel[®], Hastelloy[®], 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.



Screwed & Forged 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.

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

Types : Elbow, Tee, Union, Cross, Coup, 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.

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

Class : 3000#, 6000#, 9000#.

PRODUCT RANGE



Flanges :-

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

Carbon Steel Flanges: ASTM A105/A694F42/46/52/56/60/65/70/A350 LF3/A350 LF2, etc.

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

Duplex Steel Flanges : 2205 (Duplex[®]), 2507 (Super Duplex) UNS - 31803, 32750, 32990

Others: 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 48" NB.

Class : 150#, 300#, 400#, 600#, 900#, 1500# & 2500#. also as per National & International Standard.

Flanges such as SORF, SOFF, SOLI SWRF, SWFF, WNRF, WNFF, WNRTJ, LWNRF, BLRF, BLFF, BLRTJ, Treaded, Spectacle Blind, Orifice & Studding Outlet are manufactured according to ANSI B 16.5, B 16.47 Series A (MSS SP-44), B 16.47 Series B (API 605), MSS SP-43, DIN 2527, DIN 2566, DIN 2576, DIN 2632, DIN 2633, DIN 2634, DIN 2635, DIN 2642, BS 10, IS 1538 & IS 6392, etc.



Sheet, Plates & Coils

S. S. Sheets & Plates as per ASTM A240, Gr. TP 304, 304L, 304LN, 309, 309S, 309H, 310H, 316, 316L, 316H, 316LN, 316Ti, 317, 317L, 321, 321H, 347, 348, 3487H, 409, 410, 416, 420, 430 etc.

Alloy Steel Plates : as per ASTM A387 Gr.2, 5, 9, 11, 12 & 22, 91 in class 1 & 2 ASTM A 204 Gr. A & B, DIN 17175 Gr. 15Mo3 & 16Mo3 with IBR Test Certificate.

Carbon Steel / Boiler Quality Plates : as per IS 2062 Gr. A, B & C, IS 2002 Gr. 1 & 2 ASTM A516 Gr. 60 & 70, ASTM A 515 Gr. 70, A572 Gr. 50 etc.



Rods / Bars & Wires

Material Grade : Stainless Steel, Nickel Alloys, Carbon Steel, Alloy Steel, IBR Non IBR.

High Nickel Alloy : Monel[®], Nickel, Inconel[®], Hastelloy[®], Copper, Brass, Bronze, Titanium, Tantalum, Bismuth, Aluminium, High Speed Steel, Zinc, Lead, etc.

Types : Rods, Hex, Square, Wires, Billets, etc.



Ship Building Plates

LRS/ABS/DNV GL/IRS/RINA/BV Class Approved Marine Grade Plates / Bulb Flats / Angle / Channel / Pipes etc.

Ship Building Copper / Cupro Nickel (CuNi) / Brass/ Bronze/ Admiralty brass Products in form of Pipe, Fittings, Flanges, Sheet, Plates, Ship Shafts, Propellor & Other marine equipments etc widely used in marine industries.

BUTT WELD & SOCKETWELD FITTING



Butt-welded : Specification

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

Carbon Steel: ASTM A234 WPB / A420 WPL3/ A420 WPL6/ MSS-SP-75 WPHY 42/46/52 /56/60/65/70/80

Alloy Steel: ASTM A234 WP1/ WP5/ WP9/ WP11/ WP22/WP91 / WP92 etc.

API 6A Type, ASTM A519 GR. 4130 / Gr. 4140

Others: Duplex, Super Duplex, 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)
1/4" NB TO 108" NB. (Welded)

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

Inconel[®], Incoloy[®], Monel[®], Hastalloy[®], Duplex[®]
are Registered Trade Marks of their Respective Owners



Socketwelded or Screwed : Specification

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

Carbon Steel: ASTM A105 / A 350 LF2 etc.

Alloy Steel: ASTM A182 F1 / F5 / F9 / F11 / F22 / F91 / F92 / AISI 4130 / AISI 4140

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

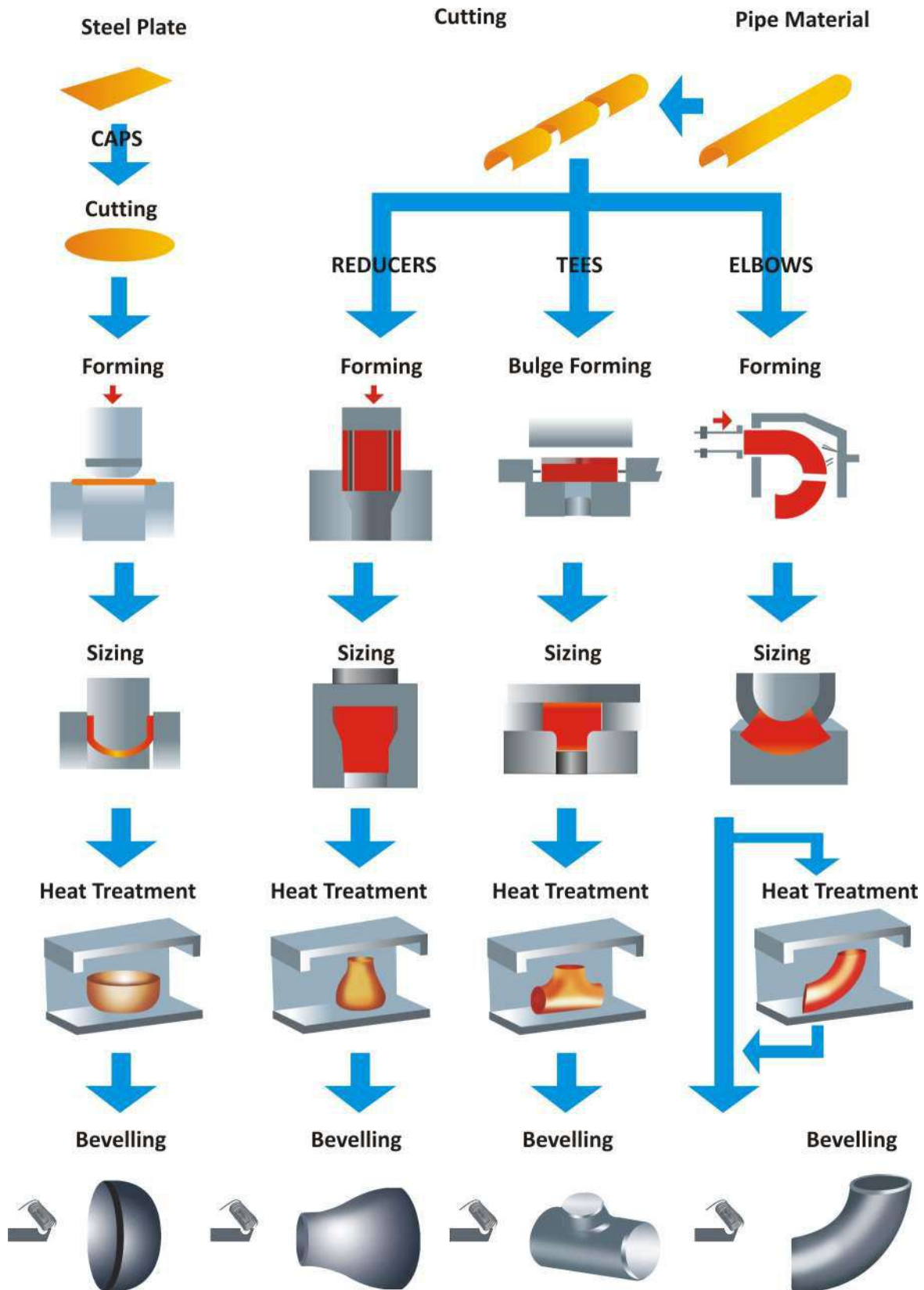
Types: Elbow, Cushion Elbow, Tee, Union, Cross, Coupling, Cap, Bushing, Plug, Swage Nipple, Welding Boss, Hexagon Nipple, Barrel Nipple, Welding Nipple, Parallel Nipple, Street Elbow, Hexagon Nut, Hose Nipple, Bend, Adapter, Insert, Weldolet, Elbolet, Sockolet, Thredolet, Nipolet, Lattrolet, etc.

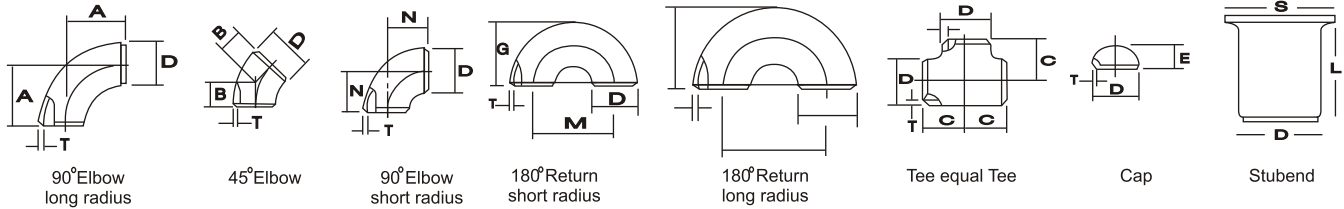
Size: 1/4" NB TO 6" NB. (Socketweld & Threaded)

Class : 3000#, 6000#, 9000#



BUTTWELD MANUFACTURING FLOW CHART

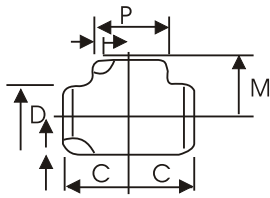


DIMENSION OF BUTT WELD FITTINGS ANSI B-16.9 / B-16.29


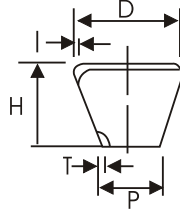
Nominal Pipe Size		Outside Diameter	Center to Face				Back to Face			Center to Center			Length 'L' MSSSP43 B16.9	
INCH	MM	D	A R=1.5D	B	C	N R=1D	E	F	G	R	M	S	Short L	Long L
1/2	15	21.3	38.00	16.0	25.0	-	25.0	48.0	-	76.0		35.0	50.8	76.2
3/4	20	26.7	29.00	11.0	29.0	-	25.0	43.0	-	57.0		43.0	50.8	76.2
1	25	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

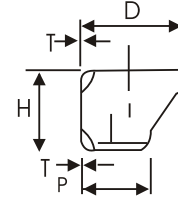
DIMENSION OF BUTT-WELD FITTINGS ANSI B-16.9 / B-16.28



REDUCING TEES



CONCENTRIC REDUCERS



ECCENTRIC REDUCERS

Nominal Pipe Size		Outside Diameter		Center to End		Length
INCH	MM	D	P	C	M	H
1/2 x 3/8	15 x 10	21.3	17.1	25	25	-
1/2 x 1/4	15 x 8	21.3	13.7	25	25	-
3/4 x 1/2	20 x 15	26.7	21.3	29	29	38
3/4 x 3/8	20 x 10	26.7	17.1	29	29	38
1 x 3/4	25 x 20	33.4	26.7	38	38	51
1 x 1/2	25 x 15	33.4	21.3	38	38	51
1 1/4 x 1	32 x 25	42.2	33.4	48	48	51
1 1/4 x 3/4	32 x 20	42.2	26.7	48	48	51
1 1/4 x 1/2	32 x 15	42.2	21.3	48	48	51
1 1/2 x 1 1/4	40 x 32	48.3	42.2	57	57	64
1 1/2 x 1	40 x 25	48.3	33.4	57	57	64
1 1/2 x 3/4	40 x 20	48.3	26.7	57	57	64
1 1/2 x 1/2	40 x 15	48.3	21.3	57	57	64
2 x 1 1/2	50 x 40	60.3	48.3	64	60	76
2 x 1 1/4	50 x 32	60.3	42.2	64	57	76
2 x 1	50 x 25	60.3	33.4	64	51	76
2 x 3/4	50 x 20	60.3	26.7	64	44	76
2 1/2 x 2	65 x 50	73.0	60.3	76	70	89
2 1/2 x 1 1/2	65 x 40	73.0	48.3	76	67	89
2 1/2 x 1 1/4	65 x 32	73.0	42.2	76	64	89
2 1/2 x 1	65 x 25	73.0	33.4	76	57	89
3 x 2 1/2	80 x 65	88.9	73.0	86	83	89
3 x 2	80 x 50	88.9	60.3	86	76	89
3 x 1 1/2	80 x 40	88.9	48.3	86	73	89
3 x 1 1/4	80 x 32	88.9	42.2	86	70	89
4 x 3 1/2	100 x 90	114.3	101.6	105	102	102
4 x 3	100 x 80	114.3	88.9	105	98	102
4 x 2 1/2	100 x 65	114.3	73.0	105	95	102
4 x 2	100 x 50	114.3	60.3	105	89	102
4 x 1 1/2	100 x 40	114.3	48.3	105	86	102
5 x 4	125 x 100	141.3	114.3	124	117	127
5 x 3 1/2	125 x 90	141.3	101.6	124	114	127
5 x 3	125 x 80	141.3	88.9	124	111	127
5 x 2 1/2	125 x 65	141.3	73.0	124	108	127
5 x 2	125 x 50	141.3	60.3	124	105	127
6 x 5	150 x 125	168.3	141.3	143	137	140
6 x 4	150 x 100	168.3	114.3	143	130	140
6 x 3 1/2	150 x 90	168.3	101.6	143	127	140
6 x 3	150 x 80	168.3	88.9	143	124	140
6 x 2 1/2	150 x 65	168.3	73.0	143	121	140

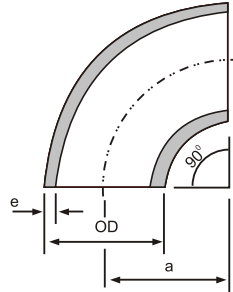
Nominal Pipe Size		Outside Diameter		Center to End		Length
INCH	MM	D	P	C	M	H
8 x 6	200 x 150	219.1	168.3	178	168	152
8 x 5	200 x 125	219.1	141.3	178	162	152
8 x 4	200 x 100	219.1	114.3	178	156	152
8 x 3 1/2	200 x 90	219.1	101.6	178	152	152
10 x 8	250 x 200	273.1	219.1	216	203	178
10 x 6	250 x 150	273.1	168.1	216	194	178
10 x 5	250 x 125	273.1	141.3	216	191	178
10 x 4	250 x 100	273.1	114.3	216	184	178
12 x 10	300 x 250	323.9	273.1	254	241	203
12 x 8	300 x 200	323.9	219.1	254	229	203
12 x 6	300 x 150	323.9	168.3	254	219	203
12 x 5	300 x 125	323.9	141.3	254	216	203
14 x 12	350 x 300	355.6	323.9	279	270	330
14 x 10	350 x 250	355.6	273.1	279	257	330
14 x 8	350 x 200	355.6	219.1	279	248	330
14 x 6	350 x 150	355.6	168.3	279	238	330
16 x 14	400 x 350	406.4	355.6	305	305	356
16 x 12	400 x 300	406.4	323.9	305	295	356
16 x 10	400 x 250	406.4	273.1	305	283	356
16 x 8	400 x 200	406.4	219.1	305	273	356
16 x 6	400 x 150	406.4	168.3	305	264	356
18 x 16	450 x 400	457.0	406.4	343	330	381
18 x 14	450 x 350	457.0	355.6	343	330	381
18 x 12	450 x 300	457.0	323.9	343	321	381
18 x 10	450 x 250	457.0	273.1	343	308	381
18 x 8	450 x 200	457.0	219.1	343	298	381
20 x 18	500 x 450	508.0	457.0	381	368	508
20 x 16	500 x 400	508.0	406.4	381	356	508
20 x 14	500 x 350	508.0	355.6	381	356	508
20 x 12	500 x 300	508.0	323.9	381	346	508
20 x 10	500 x 250	508.0	273.1	381	333	508
20 x 8	500 x 200	508.0	219.1	381	324	508
24 x 22	600 x 550	610.0	559.0	432	432	508
24 x 20	600 x 500	610.0	508.0	432	432	508
24 x 18	600 x 450	610.0	457.0	432	419	508
24 x 16	600 x 400	610.0	406.4	432	406	508
24 x 14	600 x 350	610.0	355.6	432	406	508
24 x 12	600 x 300	610.0	323.9	432	397	508
24 x 10	600 x 250	610.0	273.1	432	384	508

All Dimensions in Millimeters

CuNi Elbows

European Standard
 10 Bar
 DIN 86089 / EEMUA 146

90 / 10 CuNi

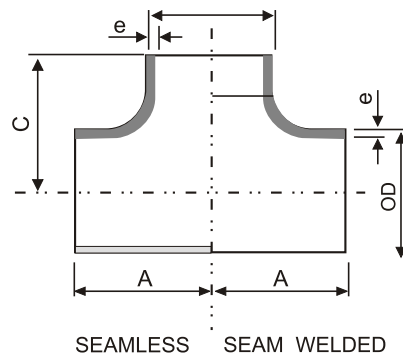


Outside diameter of pipe ØD		Wall thickness e mm	Radius a mm	Theoretical Weight kg/piece	Availability
Nominal Inch	actual mm				
0.5	20	1	25	0.02	●
0.75	25	1.5	27.5	0.04	●
1	30	1.5	33.5	0.06	●
1.25	38	1.5	45	0.10	●
1.5	44.5	1.5	51	0.14	●
2	57	1.5	72	0.26	●
2.5	76.1	2	95	0.61	●
3	88.9	2	114.5	0.87	●
4	108	2.5	142.5	1.64	●
5	133	2.5	181	2.58	●
6	159	2.5	216	3.70	●
7	193.7	2.5	270	5.65	●
8	219.1	3	305	8.66	●
10	267	3	378	13.10	●
12	323.9	4	457	25.61	●
14	368	4	533.5	34.00	●
16	419.1	4	609.5	39.40	●
18	457.2	4	686	48.40	●
20	508	4.5	762	75.62	●
24	610	5	915	121.24	●

CuNi Tees

European Standard
 10 Bar
 DIN 86088 / EEMUA 146

90 /10 CuNi

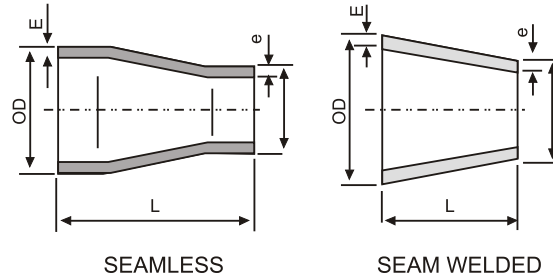


Outside diameter of Pipe ϕD		Wall Thickness	A	C	Theoretical Weight	Availability
Nominal inch	actual mm	e mm	mm	mm	kg/piece	
0.5	20	1	25	25	0.05	
0.75	25	1.5	29	29	0.07	•
1	30	1.5	38	38	0.10	
1.25	38	1.5	48	48	0.13	•
1.5	44.5	1.5	57	57	0.19	•
2	57	1.5	64	64	0.29	•
2.5	76.1	2	76	76	0.65	•
3	88.9	2	86	86	0.82	•
4	108	2.5	105	105	1.60	
5	133	2.5	121	121	3.10	•
6	159	2.5	143	143	4.40	
7	193.7	2.5	157	157	4.70	
8	219.1	3	178	178	12.8	•
10	267	3	216	216	16.6	
12	323.9	4	254	254	31.5	
14	368	4	279	279	39.4	
16	419.1	4	305	305	55.1	
18	457.2	4	343	343	67.65	
20	508	4.5	381	381	92.8	
24	610	5	432	432	126.6	

CuNi Reducers

European Standard
 10 Bar
 DIN 86089 / EEMUA 146

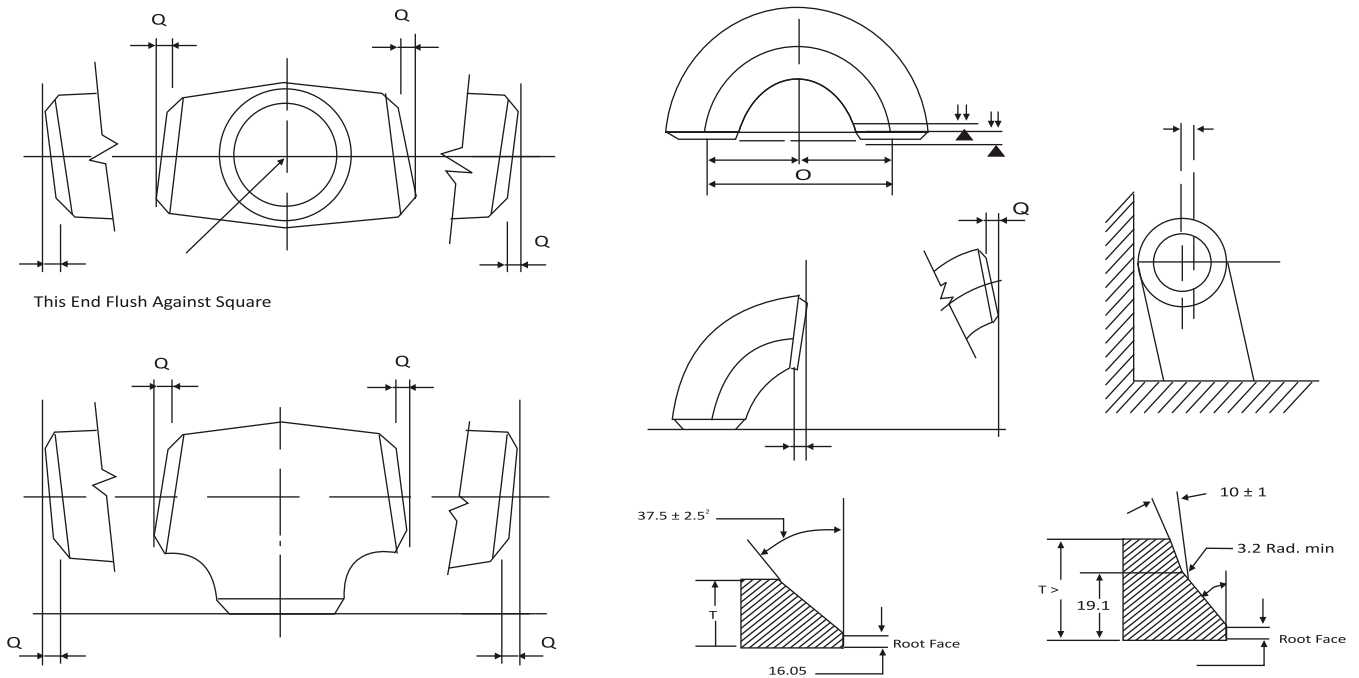
90 / 10 CuNi

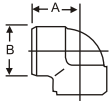
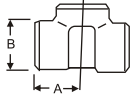
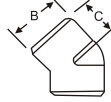
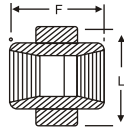
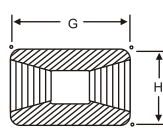
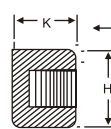
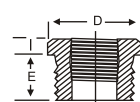
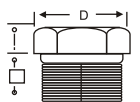


Outside Diameter		Wall thickness		Length L mm	Theoretical Weight Kg / piece	Availability
ØD x Ød Nominal inch	ØD x Ød Actual mm	E mm	e mm			
0.5 X 0.38	20 X 16	1	1	30	0.01	
0.75 X 0.38	25 X 16	1.5	1	30	0.02	
0.75 X 0.5	25 X 20	1.5	1	30	0.03	•
1X 0.38	30 X 16	1.5	1	35	0.03	
1 X 0.5	30 X 20	1.5	1	35	0.04	•
1 X 0.75	30 X 25	1.5	1.5	35	0.05	•
1.25 X 0.38	38 X 16	1.5	1	50	0.05	
1.25 X 0.5	38 X 20	1.5	1	50	0.06	•
1.25 X 0.75	38 X 25	1.5	1.5	50	0.07	•
1.25 X 1	38 X 30	1.5	1.5	50	0.08	•
1.5 X 0.5	44.5 X 20	1.5	1	80	0.09	•
1.5 X 0.75	44.5 X 25	1.5	1.5	80	0.11	•
1.5 X 1	44.5 X 30	1.5	1.5	80	0.12	
1.5 X 1.25	44.5 X 38	1.5	1.5	80	0.13	•
2 X 0.5	57 X 20	1.5	1.5	80	0.14	•
2 X 0.75	57 X 25	1.5	1.5	80	0.14	•
2 X 1	57 X 30	1.5	1.5	80	0.15	•
2 X 1.5	57 X 38	1.5	1.5	80	0.16	•
2 X 1.5	57 X 44.5	1.5	1.5	80	0.24	•
2.5 X 1	76.1 X 30	2	1.5	90	0.25	
2.5 X 1.25	76.1 X 38	2	1.5	90	0.25	•
2.5 X 1.5	76.1 X 44.5	2	1.5	90	0.26	•
2.5 X 2.0	76.1 X 57	2	1.5	90	0.29	•
3 X 1.25	88.9 X 38	2	1.5	90	0.29	
3 X 1.5	88.9 X 44.5	2	1.5	90	0.30	
3 X 2.0	88.9 X 57	2	1.5	90	0.32	•
3 X 2.5	88.9 X 76	2	2	90	0.40	•
4 X 1.5	108 X 44.5	2.5	1.5	100	0.46	
4 X 2	108 X 57	2.5	1.5	100	0.48	
4 X 2.5	108 X 76.1	2.5	2	100	0.57	•
4 X 3	108 X 88.9	2.5	2	100	0.61	•

DIMENSION TOLERANCE ANSI B 16.9 / B16.28 / MSS SP - 43

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	B16.9	
1/2" - 2 1/2" 15 - 65	±1.6 -0.8		±0.8			FROM 1/2" TO 18" 15 TO 600	FROM 3/4"	FROM 1/2"-24" 15 - 600	FROM 1/2" - 8" 15 - 200							±3	±3.17	1/2" - 4" 15 - 100	±1		±2	
3" - 3 1/2" 80 - 90	±1.6	±0.80						±2	±1.60	±2	±1.60	±6	±6.35	±6.0	±6.4	±1		5" - 8" 125 - 200	±2		±4	
4" 100																		±1.6	±3		±5	
5" - 6" 125 - 150	±2.4	±1.60															±6.35	14" - 16" 350 - 400	±3	400 - 600 1.6	±7	
8" 200																		±2.4	±3		±10	
10" - 18" 250 - 450	+4 -3.2	+2.38 -0.80	±3.2	Not Less Than 87.5% Nominal Thk.				±2.40	10" - 24" +2.38 250 - 600	±10"	±10							26" - 30" 650 - 750	±4	26" - 36" 650 -	±10	
20" - 24" 500 - 600	+6.4	3.17																	32" - 42" 800 - 1050		±5	±13
26" - 30" 650 - 750	+6.4 -4.8	±4.8	±4.8																44" - 48" 1100 - 1200	±5	1200 3.2	±20
32" - 48" 800 - 1200	+6.4 -4.8																		42" - 48" 1050 - 1200	±5		±20

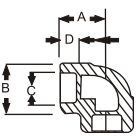
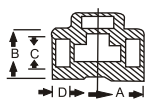
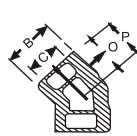
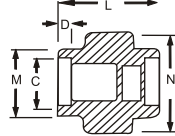
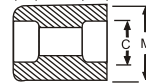
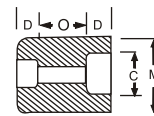
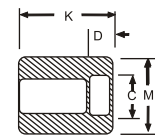
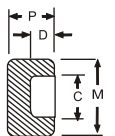


DIMENSION IN MM OF FORGED SCREWED & SOCKET WELD FITTINGS
90° ELBOWS

TEE

45° ELBOW

UNION

COUPLING

PIPE CAP

BUSHING

HEX HEAD PLUG


HALF COUPLING = G/2

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

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	38	22	25	17.5	13	48	4	8	38	33	38	25	38	32	27
1/2"	21.3	33	38	25	48	29	32	22	15	51	5	8	46	38	46	29	48	38	33
3/4"	26.7	38	46	29	51	35	37	27	16	57	6	10	51	44	56	33	51	44	38
1"	33.4	44	56	33	60	44	41	35	19	64	6	10	60	51	62	35	60	57	43
1 1/4"	42.2	51	62	35	67	57	44	44.5	21	70	7	14	72	60	75	43	67	64	46
1 1/2"	48.3	60	75	43	79	64	44	51	21	79	8	16	80	64	84	44	79	76	48
2"	60.3	64	84	45	86	76	48	63.5	22	88	9	17	94	83	102	52	86	92	51
2 1/2"	73.02	83	102	52	92	92	60	76	27	118	10	21	122	95	121	64	92	108	64
3"	89.0	95	121	64	108	108	65	89	29	121	10	25	140	106	146	79	108	127	68
4"	114.5	114	152	79	121	140	68	117.5	32	150	13	25	180	114	152	79	121	159	75

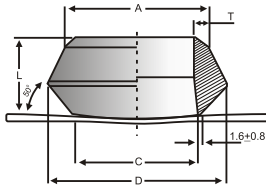
90° ELBOWS

TEE

45° ELBOW

UNION

COUPLING

REDUCER

HALF COUPLING

CAP

SOCKET WELD FITTING TO ANSI B-16.11

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

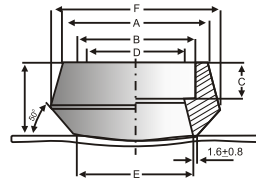
DIMENSIONS AND OTHERS SPECIFICATIONS AS PER CUSTOMERS REQUIREMENTS ARE AVAILABLE ON REQUEST

As per MSS SP97

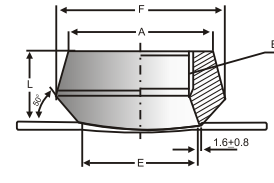
ISO 9001:2015, ISO 14001:2015, ISO 45001:2018
 & PED 2014/68/EU Certified Manufacturing Company



WELDOLET



SOCKOLET



THREDOLET

(In mm)

WELDOLET

OUTLET NOMINAL SIZE	A	C			L			D			Weight Kg		
		S40 STD	S80 XS	XXS S160	S40 STD	S80 XS	XXS S160	S40 STD	S80 XS	XXS S160	S40 STD	S80 XS	XXS S160
1/2	21.3	23.8	23.8	14.3	19.1	19.1	28.6	34.9	34.7	34.9	0.08	0.09	0.11
3/4	26.7	30.2	30.2	19.1	22.2	22.2	31.8	44.5	44.5	44.5	0.11	0.14	0.32
1	33.5	36.5	36.5	25.4	27.0	27.0	38.1	54.0	54.0	50.8	0.23	0.21	0.38
1 1/4	42.2	44.5	44.5	33.3	31.8	31.8	44.5	65.1	65.1	61.9	0.36	0.41	0.57
1 1/2	48.3	50.8	50.8	38.1	33.3	33.3	50.8	73.0	73.0	69.9	0.45	0.50	0.79
2	60.5	65.1	65.1	42.9	38.1	38.1	55.6	88.9	88.9	81.0	0.79	0.79	0.97
2 1/2	73.2	76.2	76.2	54.0	41.3	41.3	61.9	103.2	103.2	96.8	1.13	1.18	1.53
3	88.9	93.7	93.7	73.0	44.5	44.5	73.0	122.2	122.2	120.7	1.81	1.86	2.87
3 1/2	101.6	101.6	101.6		47.0	47.6		142.9	136.5		2.49	2.54	
4	114.3	120.7	120.7	98.4	50.8	50.8	84.1	152.4	152.4	152.4	2.86	2.90	4.76
5	141.2	141.3	141.3	122.2	57.2	57.2	93.7	179.4	179.4	187.3	4.65	4.72	6.46
6	168.3	169.9	169.9	146.1	60.3	77.8	104.8	215.9	225.4	220.7	5.44	10.43	12.70

SOCKOLET

OUTLET SIZE	Class 3000 #								Class 6000 #					
	A	B	C	D	E	F	L	(kg) W.T.	C	D	E	F	L	(kg) W.T.
1/2"	33	21.7-22	21.1±0.5	15.0-16.6	23.8	34.9	25.4	0.14	13.5±0.5	11.0-12.6	10.1	44.5	31.8	0.23
3/4"	39	27.1-27.3	13.5±0.5	20.2-21.7	30.2	44.5	27	0.15	15.5±0.5	14.8-16.3	25.4	50.8	36.5	0.36
1"	47.3	33.8-34	15.2±0.8	25.9-27.4	34.5	54	33.3	0.27	17.0±0.8	19.9-21.5	33.3	61.9	39.7	0.39
1 1/4"	57	42.5-42.8	17.4±0.8	34.3-35.8	44.5	65.1	33.3	0.39	19.0±0.8	28.7-30.2	38.1	69.9	41.3	0.73
1 1/2"	63.4	48.6-48.9	18.8±0.8	40.1-41.7	60.8	73	34.9	0.47	21.0±0.8	33.2-24.7	49.2	82.6	42.9	0.91
2"	77	61.1-51.4	21.8±0.8	51.7-53.3	65.1	88.9	38.1	0.73	23.0±0.8	42.1-43.6	69.9	103.2	52.4	2.33
2 1/2"	96.6	73.8-74.2	25.8±1.5	61.2-64.2	76.2	103.2	39.7	1.25						
3"	114	89.8-90.2	29.1±1.5	76.4-79.5	93.7	122.2	44.5	1.72						
3 1/2"	127	102.6-103.0	29.1±1.5	88.7-91.7	101.6	133.4	54	1.95						
4"	138.9	115.4-115.8	35.4±1.5	100.7-103.7	120.7	152.4	47.6	3.29						

THREDOLET

OUTLET SIZE	Class 3000 #						Class 6000 #					
	A	B	E	F	L	(kg) Weight	A	B	E	F	L	(kg) Weight
1/2"	33	NPT 1/2"	23.8	34.9	25.4	0.11	43	NPT 1/2"	19.1	44.5	31.8	0.2
3/4"	39	NPT 3/4"	30.2	44.5	27	0.16	49	NPT 3/4"	25.4	50.8	36.5	0.34
1"	47.3	NPT 1"	36.5	54	33.3	0.28	59	NPT 1"	33.3	61.9	39.7	0.56
1 1/4"	57	NPT 1 1/4"	44.5	65.1	33.3	0.41	69	NPT 1 1/4"	38.1	69.9	41.3	0.71
1 1/2"	63.4	NPT 1 1/2"	50.8	73	34.9	0.45	77	NPT 1 1/2"	49.2	82.6	42.9	0.89
2"	77	NPT 2"	65.1	88.9	38.1	0.79	91	NPT 2"	69.9	103.2	52.4	2.3
2 1/2"	96.6	NPT 2 1/2"	76.2	103.2	46	1.36		-				
3"	114	NPT 3"	93.7	122.2	50.8	1.97		-				
3 1/2"	122.2	NPT 3 1/2"	101.6	133.4	54	2.61		-				
4"	138.9	NPT 4"	120.7	152.4	57.2	3.22		-				

Clientele



Eckhardt Steel & Alloys

ISO 9001:2015, ISO 14001:2015,
ISO 45001:2018 & PED 2014/68/EU
Manufacturing Certified Company

more than 1000 + A Group clients

300+
INTERNATIONAL CLIENTS

700+
HAPPY CLIENTS

50+
INDUSTRY EXPERIENCE

INDIAN CLIENTS



OVERSEAS CLIENT



FORMULAE OF CALCULATING WEIGHT

- WEIGHT OF STAINLESS STEEL / CARBON STEEL PIPES & TUBES
 $OD \text{ (mm)} - W.T. \text{ (mm)} \times W.T. \text{ (mm)} \times 0.02466 = \text{KG/MTR}$
- WEIGHT OF COPPER PIPES & TUBES
 $O.D. \text{ (mm)} - W.T. \text{ (mm)} \times W.T. \text{ (mm)} \times 0.0285 = \text{KG/MTR}$
- WEIGHT OF ALUMINIUM PIPES & TUBES
 $O.D. \text{ (mm)} - W.T. \text{ (mm)} \times W.T. \text{ (mm)} \times 0.0082 = \text{KG/MTR}$
- WEIGHT OF LEAD PIPES & TUBES
 $O.D. \text{ (mm)} - W.T. \text{ (mm)} \times W.T. \text{ (mm)} \times 0.0345 = \text{KG/MTR}$
- SHEET WIDTH REQD FOR ROLLED & WELDED PIPES
 $O.D. \text{ (mm)} - \text{Thk. (mm)} \times 3.14 = \text{SHEET WIDTH (mm)}$
- WEIGHT FOR SQUARE / RECTANGLE PIPES
 $\text{Length From 4 Angle (OD)} / 3.14 - \text{Thk (mm)} \times \text{Thk. (mm)} \times 0.00756 = \text{KG/PER FEET}$
- WEIGHT OF STAINLESS STEEL CIRCLE & BLANKS
 $O.D. \text{ (mm)} \times O.D. \text{ (mm)} \times \text{Thk (mm)} / 160 / 1000 = \text{KG/PCS.}$
- WEIGHT OF STAINLESS STEEL SHEETS & PLATES
 $\text{Length (mtr)} \times \text{Width (mtr)} \times \text{Thk. (mm)} \times 8 = \text{KG/SHEET}$
- WEIGHT OF CARBON STEEL SHEETS & PLATES
 $\text{Length (mtr)} \times \text{Width (mtr)} \times \text{Thk. (mm)} \times 7.85 = \text{KG/SHEET}$
- WEIGHT OF ALUMINIUM SHEETS & PLATES
 $\text{Length (mtr)} \times \text{Width (mtr)} \times \text{Thk. (mm)} \times 2.66 = \text{KG/SHEET}$
- WEIGHT OF LEAD SHEETS & PLATES
 $\text{Length (mtr)} \times \text{Width (mtr)} \times \text{Thk. (mm)} \times 11.2 = \text{KG/SHEET}$
- WEIGHT OF STAINLESS STEEL ROUNDS / ROUND BAR
 $\text{Dia. (mm)} \times \text{Dia. (mm)} \times 0.00623 = \text{KG/MTR}$
- WEIGHT OF STAINLESS STEEL HEXAGONAL RODS
 $\text{Dia. (mm)} \times \text{Dia. (mm)} \times 0.00679 = \text{KG/MTR}$
- WEIGHT OF STAINLESS STEEL SQUARE RODS
 $\text{Dia. (mm)} \times \text{Dia. (mm)} \times 0.00787 = \text{KG/MTR}$



ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 & PED 2014/68/EU Certified Manufacturing Company

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