



# ONE STOP SOLUTION FOR STAINLESS STEEL | NICKEL



📍 Ground Floor, Shop No.2, Mehta kunj CHS Ltd, 12 Sadashiv Lane, V P Road, Girgaon, Mumbai, Maharashtra, 400004

📍 Plot No. 657, G.I.D.C, Waghodia, Baroda, Gujarat - 391760 (India)

**Contact details:**

☎ +91 90999 99080    ☎ +91 90999 99071

✉ marketing@aavinstainless.com    🌐 www.aavinstainless.com

Bright Annealed Tube

Pipes

Seamless Fittings

Heat Exchanger Tubing



# About us

AAVIN STAINLESS PVT LTD is a Stainless Steel company with the vision to be the Leader from INDIA in Stainless and Nickel Alloy Tubes with success based on Operational Excellence and Superlative Services.

We are dedicated to help our customers gain a competitive advantage by supplying a wide range of products such as Tubes, Pipes, U Tubes, and Coil Formed Tubes. AAVIN has well established "State of Art" facilities with continuous enhancement of the product and services to serve the customers across the globe. Our quality management system confirm to ISO 9001, 14001, 45001 and PED certificated by TUV. We have customers from a wide range of Industries such as – Power plant, Oil & Gas, Pharmaceuticals, Automobiles, Desalination and more. Our products are used in Engineering Applications such as – Pressure Vessels, Heat Exchanger, Condenser, Heat Recovery System and more. Our products, technology and services, which are used worldwide with, complete peace of mind.

Due to modern manufacturing process, equipment's and inspection tools practiced by us in producing the products and putting them through strict Quality Control Procedure, we are glad to state that our products have stood the test of close Scrutiny with relation to materials and standards laid down for these products. Our Products meet the requirements of International and National standards.

Our product undergo various stringent inspection & testing stages at the up to date in house facilities, such as Chemical, Mechanical, Hydrostatic, Corrosion test, Non-Destructive test etc. before they are dispatched to the customers. This assures high Value quality of products.

We succeed when our customer's succeed. We put our customer's interest first in everything we do. Most importantly, we measure our success by our ability to partner with respected Customers, Suppliers & our People.

## Core Purpose

- Wealth Creation for the company and for the people associated with the company.
- To experience the sheer joy of creating a smile on the face of the buyers from all over the world.
- To elevate the level of Manufacturing of stainless steel pipes and tubes.
- To elevate millions of entrepreneurs with example of our success stories.
- We put all our thoughts, words and actions for the customer delight in price, product and service.
- To become a preferred choice Organization for the people and partners.

## Certificates

Annex to Certificate No. 01 202 INCH 20 0118

Scope according to	Directive 2014/68/EU Annex I §4.3	EN 764-4	AD 2000-Merkblatt WD	Regulation (EU) No. 305/2011 (System 2+)
Company Name	Manufacturer Avavin Stainless Pvt Ltd	Plant No. 657, G.I.D.C., Wagholia, Maharashtra 411007	Country India	Page No. 1
Location	Plant No. 657, G.I.D.C., Wagholia, Maharashtra 411007			TUV Rheinland Industrie Service GmbH
Material	Material Specification	Delivery Code	Article Type of Product	Dimensions
Material No.				Thickness mm
				Ø mm
				Weight max
				Technical Specifications
				Requirements
				Technical Regulations
<p>1. Materials according to harmonized European Standards (EN) and European Approval for Materials (EM) acc. Directive 2014/68/EU</p> <p>The use of the materials according to Directive 2014/68/EU is limited to the production of pressure vessels, based on or in the qualification by a European technical approval or to the technical national approval with full the manufacturing liability by responsible national bodies according to their standards (e.g. DR, ADR, ADM) or national technical regulations and standards of the applicable code respectively the PED must be observed for the use of material grade listed in column 2 &amp; 4.</p>				
1	1.4402	EN 10216-5	AT	0.5 20 0 6.3 308.8
				Stainless Steel Pipes U Tubes
Results	<ul style="list-style-type: none"> <li>+A1 = solution annealed</li> <li>+A2 = as rolled</li> <li>+A3 = thermo mechanical treated</li> <li>+R = normalized or non-normalizing treated</li> </ul>	<ul style="list-style-type: none"> <li>+N1 = normalized and tempered</li> <li>+N2 = quenched and tempered</li> <li>+S = not approved</li> <li>+SR = normalized or non-normalizing treated</li> </ul>		<ul style="list-style-type: none"> <li>o = PMA for the use in pressure equipment in Directive 2014/68/EU necessary</li> </ul>

MS-001058 E-100-Questionnaire M8-Funk-Scope-Rev 01 Docx MS-001058 E-007 E-Rev 01 page 1/4



## Company Overview

Avavin Stainless Pvt Ltd has worked towards being the leading steel giant.

Avavin Stainless Pvt Ltd has now taken a step further and expanded into the manufacturing of Stainless Steel Seamless & Tubes, Pipes & U-Tubes. With a team that has a vast depth of experience and the best of technology at their disposal, Avavin Stainless Pvt Ltd is on the path of becoming the country's best Stainless Steel Pipes, Tubes and U-Tubes supplier.

Our testing facilities meet the approval of even the most stringent inspections by third parties & other agencies.

The very best of tolerance of all our products has made us the leading producers of stainless steel seamless high precision heat exchange tubing. The strategic position of our manufacturing plant in Baroda, Gujarat ensures direct access to the right roads and railways making our transportation seamless and fast. This has garnered us the reputation of always being on time with our delivery.



## Mission

Avavin Stainless Pvt. Ltd. has a commitment to excel. We are committed to dedicated Work Technical Excellence and Quality Products.

## Vision

Avavin Stainless Pvt. Ltd. will continuously strive to attain and sustain BEST IN CLASS status as a manufacturer. This achievement will be accomplished by committed and well trained people employing teamwork, communication, perseverance and customer service to the maximum in a safe and co-operative environment.



# QualityControl

All Aavin products are manufactured under strict process control and monitored throughout the production process. They are subjected to a number of checks to ensure total control conformity to specifications.

Our quality management system confirms ISO 9001, 14001,45001, and PED certificated by TUV.



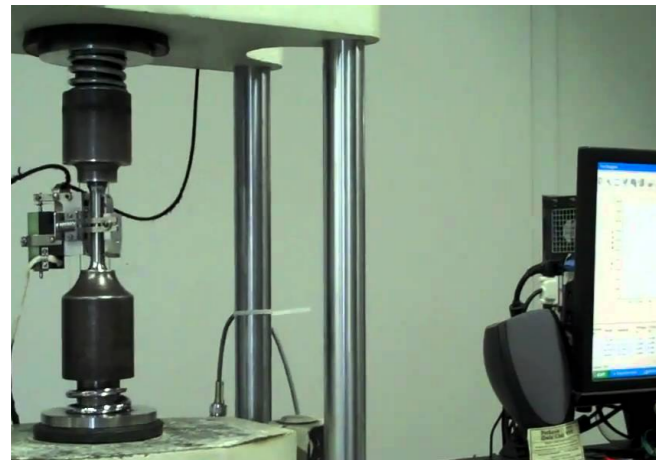
## Chemical Analysis

Chemical Test as per required quality.



## Corrosion Test

Corrosion test is conducted only when specially requested by the client.



## Destructive/Mechanical Testing

Tensile, Hardness, Flattening, Flare, Flange and Reverse-bend tests are carried out in full compliance with relevant standards, i.e. ASTM A-1016 and A-999 norms. This ensures trouble-free expansion, welding and use at customers end.



## Eddy Current Testing

To detect homogenities in subsurface, eddy current testing is carried out using Digital Flaw-mark Testing System.

## Ultrasonic Testing

This Test is carried out to detect Special Process Flow as per ASTM A 213 / A 450.

## Hydrostatic Testing

100% Hydrostatic Testing is carried out according to ASTM- A 1016 norms to check tubes for leakage.

## Marking

To ensure complete identification and traceability, all the information as required by the standards i.e. Brand Name, Size, Grade, Specifications, Heat no./Lot No. is marked on all the pipes and tubes by using the latest inkjet marking machine.

## Air Under Pressure Test

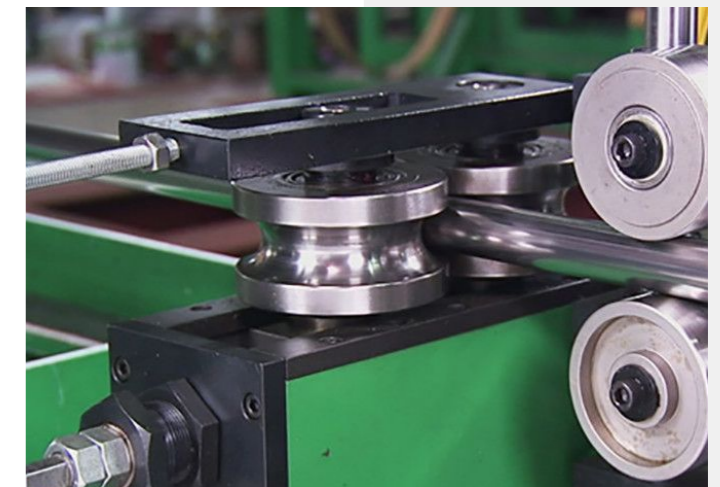
Tubes are internally pressurized with clean and dry compressed air and being submerged in clear water to check any evidence of air leakage.

## Visual Inspection

After passivation, every single length of tubes and pipes is subjected to a thorough visual inspection by trained staff to detect surface flaws and other imperfections.

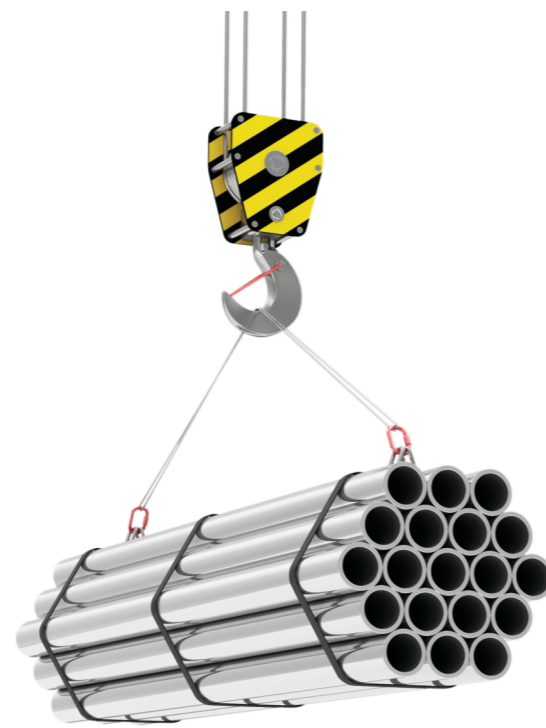
## Supplementary Test

- IGC Test (Inter Granular Corrosion Test)
- Micro-Structure Analysis
- Macro
- Radiography Test
- Ultrasonic test
- Liquid Penetrate test
- Eddy Current
- Hot Tensile



# Seamless Pipes & Tubes

Procured mother tubes or hollows from leading suppliers from India & Abroad are directed to a thorough chemical analysis and strict physical/ mechanical tests. The mother tube are subsequently cold-drawing with determined precise and force. The OD of the tube is there by reduced by tension through a die and a fixed or floating plug, to get a precise mechanical dimensions and a uniform surface finish. These tubes are then subjected to various process like Pickling, Passivation, Hydro testing, Polishing, Inspection, Marking before Packing & Despatch



Materials	ASTM/UNS	EN10216/DIN	Outer Diameter	Wall Thickness	Lenght	Standard
Austenitic	304/S30400	1.4301/X5CrNi 18-10	13.7-323mm DN8-DN550 1/8" - 12"	1.65-60mm Sch5s- SchXXS	≤12m	ASTM-A312 ASTM-A790 En10216
	304L/S30403	1.4306/X2CrNi 19-11				
	304H/S30409	1.4948/X6CrNi 18-10				
	316/S31600	1.4401/X5CrNiMo 17-12-2				
	316L/S31603	1.4404/X2CrNiMo 17-12-2				
	316H/S31609	1.4436/X3CrNiMo 17-13-3				
	321H/S32100	1.4541/X6CrNiTi 18-10				
	321H/S32109	1.4878/ X8CrNiTi 18-10				
	317L/31703	1.4438/X2CrNiMo 18-15-4				
	347H/S34700	1.4550/X6CrNiBb 18-10				
	347H/S34709	1.4912/X7CrNiNb 18-10				
	309S/S31008	1.4833/X12CrNi 23-13				
	310S/S31008	1.4845/X12CrNi 25-21				
	904L/N08904	1.4539/X1CrNiMoCu 25-20-5				
S31254/254SMO	1.45475/X1 Crnimoncum 20-18-7					
Duplex Steel	2205/S32205	1.4462/X2 CrNiMoN 22-5-3				
	2507/S32750	1.4410/X2CrNiMoN 25-7-4				

Testing Equipment	
Name	Quantity
Ultrasonic/Eddy Current Integrated Machine	1 set
Hydro testing Machine	4 set
Spectro Machine	1 set
PMI	2 set
IGC Testing	1 set
Boroscope	2 set
Physical and Chemical Test Equipment	1 set
Hydraulic Universal Testing Machine	1 set
Pendulum Impact Testing Machine	1 set
Rockwell Hardness Tester	2 set

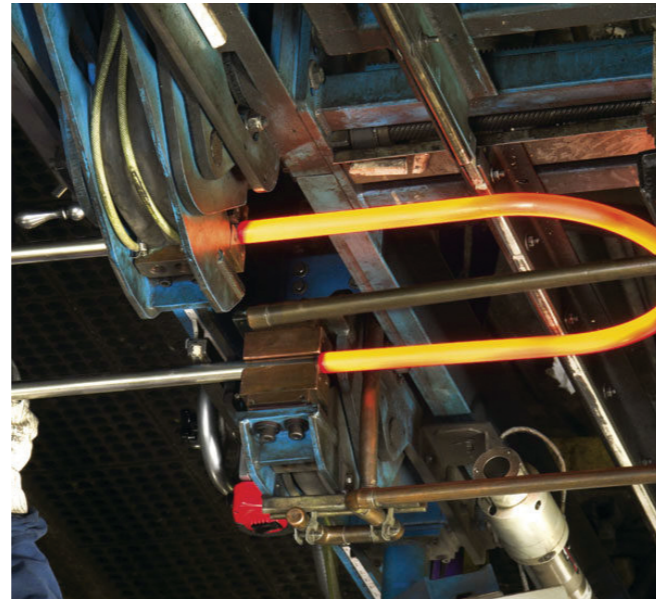


Production Equipment	
Name	Quantity
Pilger Mill	5 set
Drawbench	4 set
Solution Annealing Furnace	2 set
Bright Annealing Furnace	1 set
Straitening Machine	3 set
Polishing Equipment	1 set
Dust Removal Equipment	1 set
Acid Mist Absorber	1 set
ETP	1 set
Pickling Tank	2 set
Degreasing Tank	1 set
Coating Tank	1 set
Soaping Tank	1 set
Lathe	3 set



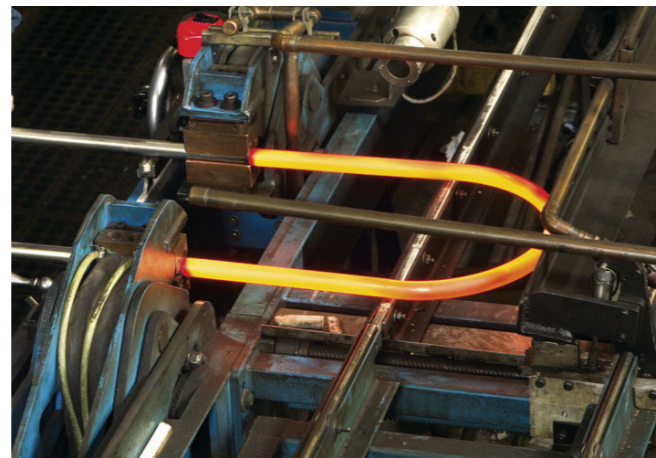
# Stainless Steel U Tubes

Latest type of 'U' bending machine is used for precision cold bending of tubes. Specifically prepared jigs and fixtures are used to ensure three-dimensional accuracy for 'U' bend tubes. Bending is done for all kinds of heat exchangers, condensers, economizers, and boiler tubes in Stainless steel seamless as well as welded. Subsequent to 'U' bending tubes are hydro-tested and stress relieved if asked for. Also, mock-up pieces are prepared for determining thickness reduction on the bend portion. Dye Penetrant testing on the bend portion is done to detect cracks, flaws or any type of defects. Special packing is provided to prevent any damage during transit.

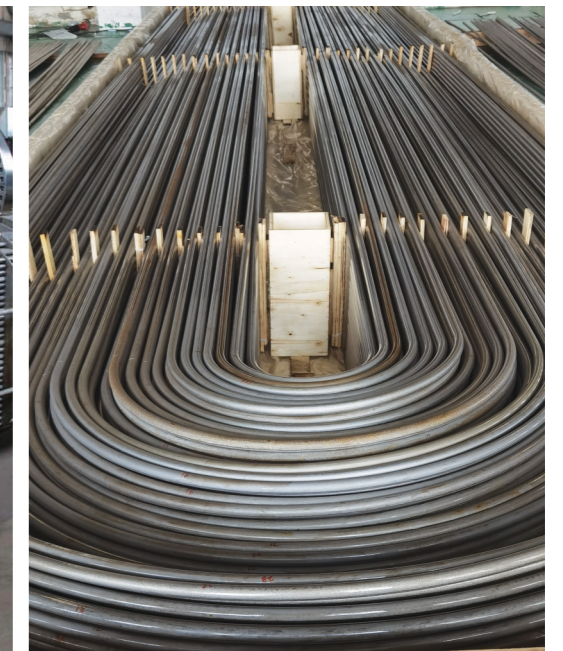
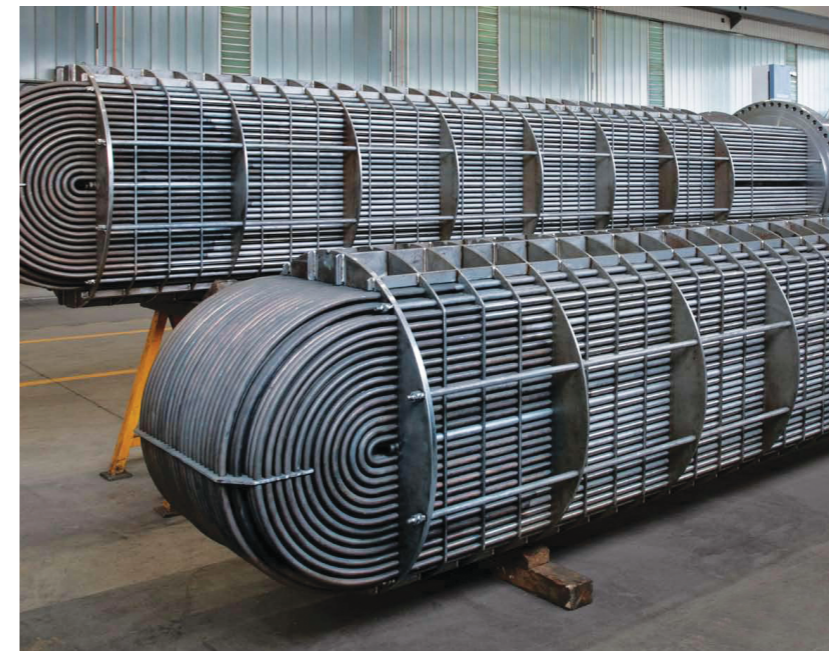


## Heat Treatment of Stainless Steel 'U' Tubes

U' bent portion + 300mm on each leg length are heated at 1050° C temperature by transformer. The temperature is measured by an Optical Pyrometer. Cooling is done immediately by blowing cold air to avoid carbide precipitation.

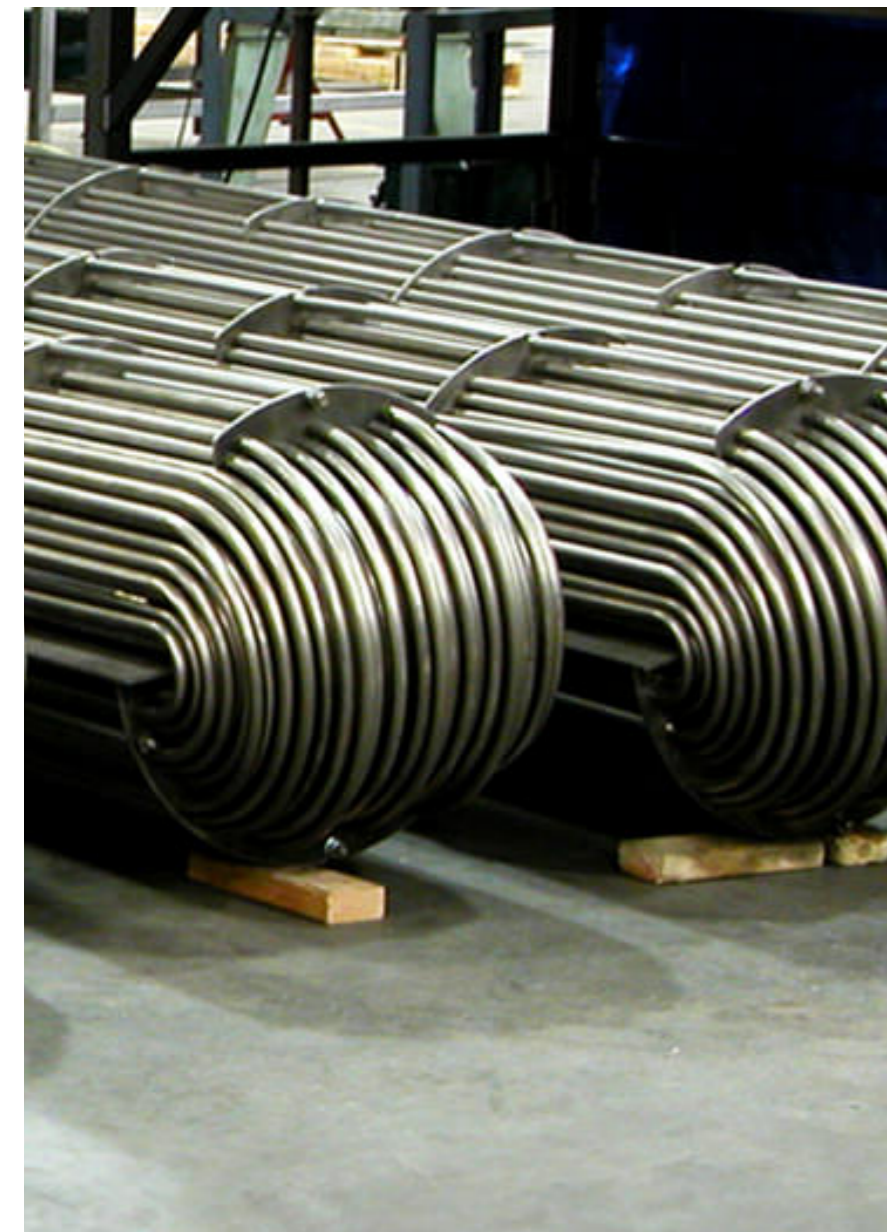


Materials	ASTM/UNS	EN10216/DIN	Outer Diameter	Wall Thickness	Lenght	Standard
Austenitic	304/S30400	1.4301/X5CrNi 18-10	6.00 mm to 114 mm	0.70 mm to 10 mm	≤25m	ASTM-213 ASTM-269 EN-10216-5 EN-10305-1
	304L/S30403	1.4306/X2CrNi 19-11				
	304H/S30409	1.4948/X6CrNi 18-10				
	316/S31600	1.4401/X5CrNiMo 17-12-2				
	316L/S31603	1.4404/X2CrNiMo 17-12-2				
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	310S/S31008	1.4845/X12CrNi 25-21				
	904L/N08904	1.4539/X1CrNiMoCu 25-20-5				
S31254/254SMO	1.45475/X1 Crnimoncum 20-18-7					
Duplex Steel	2205/S32205	1.4462/X2 CrNiMoN 22-5-3				
	2507/S32750	1.4410/X2CrNiMoN 25-7-4				

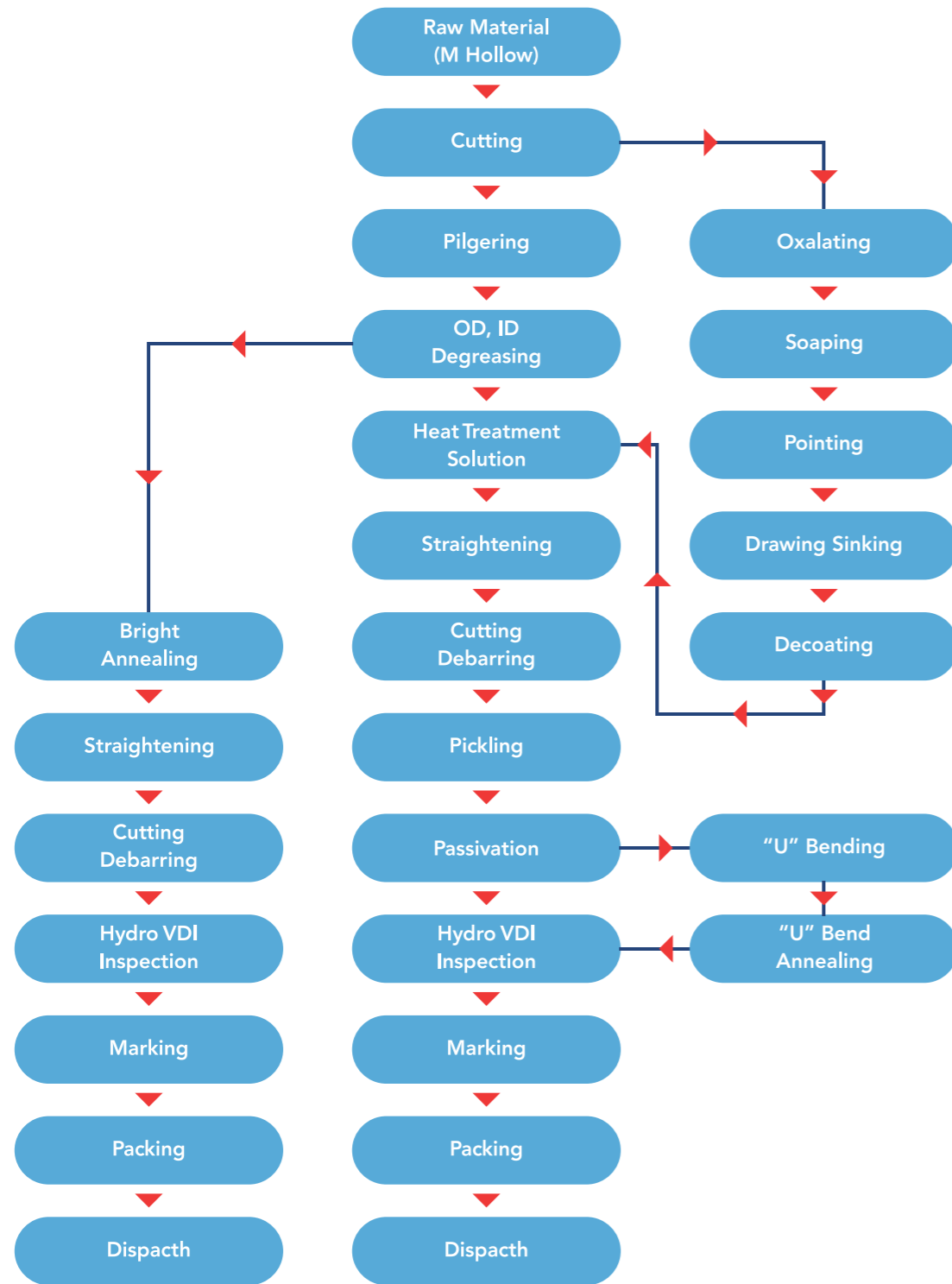


## Large Diameter Pipes

Stainless Steel Pipe 10" NB to 24" NB. in schedule 5, Schedule 10. Schedule 20, Schedule 40 and also special wall thickness is formed on 800 M.T.Press Brakes Hydraulic Press in length upto 6.0 to 7.0 meters. This section produces S.S. Pipes (welded) as per ASTM A - 358 by TIG welding and filler materials is used. The large diameter pipe is then sized & straightened to meet ovality and dimensional requirements of the applicable specifications. Testing, according to specifications, is then performed by either X-ray or Hydrostatic method. Final marking to size, grade & specifications is done prior to final visual inspection before despatch. Chemical, Physical and Hydrostatic testing is done regularly since input raw materials are taken into the factory and during processing till despatching



# Manufacturing process of Seamless Tubes & Pipes

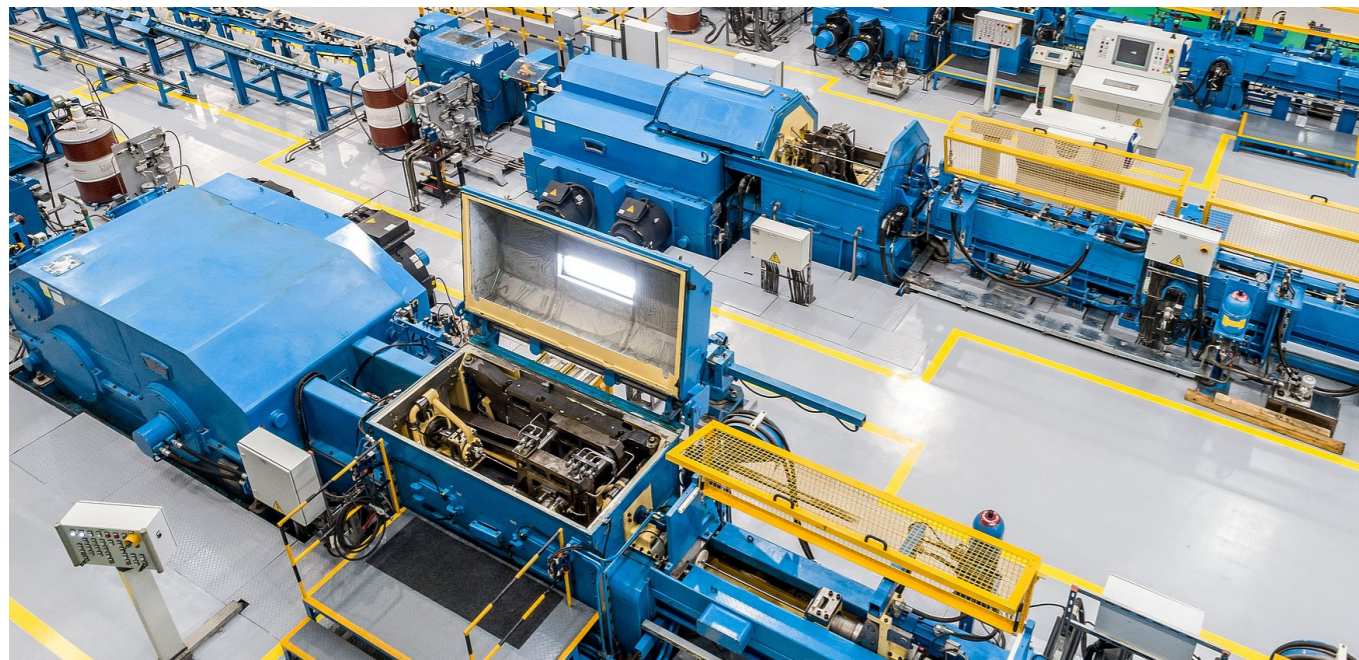


**Production Capacity**

## Hot Pircing Mill



## Cold Pilgar Mill



## ASTM Specification & Tolerance for Tubing & piping

Specification	Allowable Outside Diameter Variation in mm			Allowable Wall Thickness Variation		Extra Length Tolerance In mm		Testing
	Nominal Diameter	Over	Under	%Over	%Under	%Over	%Under	
ASTM-A213	Under 25.4	.1016	.1016	+20	-0	3.175	0	Flattening Test
Seamless Boiler	25.4-38.1 incl	.1524	.1524	+22	-0	3.175	0	Tension Test
Superheater	38.1-50.8 excl	.2032	.2032	+22	-0	3.176	0	Flare Test
and Heat	50.8-63.5 excl	.254	.254	+2	-0	4.46	0	100% Hydrosatic test
Exchanger	63.5-76.2 excl	.3048	.3048	+22	-0	4.46	0	Refer to ASTM A-450
Tubes	76.2- 101.6 inch	.381	.381	+22	-0	4.46	0	
ASTM-A269	Untp 12.7	.13	.13	+15	-15	3.2	0	Flare Test
Seamless	12.7- 38.1 excl	.13	.13	+10	-10	3.2	0	(Seamless Only)
	38.1-88.9 excl	.25	.25	+10	-10	4.8	0	Flange Test
Tubing for	88.9-139.7 excl	.38	.38	+10	-10	4.8	0	100% Hydrostatic test
General	139.7-203.2 excl	.76	.76	+10	-10	4.8	0	Refer to ASTM-A69
Service								
ASTM-A312	3.175-38.1inch	.4	.79	Minimum Wall		6.4	0	Tension Test
Seamless	38.1-1016 inch	.79	.79	12.5% under nominal		6.4	0	Flattening Test
	101.6-203.2 imcl	1.59	.79	wall specified		6.4	0	100% Hydrostatic Test
								Refer to ASTM A-#)#
								(Normally Random Lengths ordered)

## Dimension & weight - Standard Tubing Sizes

DIMENSTION		10SWg	12SWg	14SWg	16SWg	18SWg	20SWg	22SWg
Size Inches	OD in mm	Wt Kg/M	Wt Kg/M	Wt Kg/M	Wt Kg/M	Wt Kg/M	Wt Kg/M	Wt Kg/M
3/8	9.52	0.549	0.447	0.405	0.341	0.268	0.193	0.165
1/2	12.7	0.768	0.654	0.542	0.451	0.350	0.264	0.213
3/4	19.05	1.285	1.068	0.684	0.710	0.544	0.407	0.320
1	25.4	1.801	1.482	1.187	0.969	0.738	0.549	0.432
1 1/4	31.75	2.801	1.482	1.187	0.969	0.738	0.549	0.432
1 1/2	38.1	2.834	2.309	1.132	1.487	1.126	0.820	0.654
1 3/4	45.00	3.408	2.722	2.191	1.775	1.341	0.834	0.765
2	50.8	3.868	3.136	2.478	2.006	1.541	1.119	0.877
2 1/2	63.5	4.901	3.963	3.123	2.524	1.858	-	-
3	76.2	5.934	4.790	3.453	2.789	2.237	-	-
3 1/2	88.9	6.964	5.617	4.413	3.560	2.616	-	-
4	101.6	8.000	6.444	5.059	4.078	2.995	-	-
4 1/2	114.3	8.900	7.272	5.620	4.501	3.374	-	-
5	127.0	9.917	8.099	6.255	5.008	3.353	-	-
6	152.4	11.953	9.753	7.527	6.023	4.474	-	-

## Stainless Steel Pipes Dimension

DESIGNATION		O/D	NOMINAL WALL THICKNESS																
OF DIA.		DIA.	SCH.5S		SCH.5		SCH.10S		SCH.10		SCH.20S		SCH.30		SCH.40S		SCH.40		
A	B	METER	WALL THK	WEIGHT MM	WALL THK	WEIGHT KG/MTR	WALL THK	WEIGHT KG/MTR	WALL THK	WEIGHT KG/MTR	WALL THK	WEIGHT KG/MTR	WALL THK	WEIGHT KG/MTR	WALL THK	WEIGHT KG/MTR	WALL THK	WEIGHT KG/MTR	
6	1/8	10.3	1.0	0.23	0	0	1.2	0.27	0	0	1.5	.33	0	0	1.73	0.37	0		
8	1/4	13.7	1.2	0.37	0	0	1.65	0.49	0	0	2.00	.58	0	0	2.24	0.64	0		
10	3/8	17.2	1.2	0.47	0	0	1.65	0.63	0	0	2.00	.74	0	0	2.31	0.87	0		
15	1/2	21.3	1.65	0.81	1.65	0.81	2.11	1.02	2.11	1.02	2.5	4.15	0	0	2.77	1.29	0		
20	3/4	26.7	1.65	1.03	1.65	1.03	2.11	1.30	2.11	1.30	2.5	1.49	0	0	2.87	1.71	0		
25	1	33.4	1.65	1.31	1.65	1.31	2.77	2.13	2.77	2.13	3.00	2.24	0	0	3.38	2.54	0		
32	1 1/4	24.2	1.65	1.67	1.65	1.67	2.77	2.73	2.77	2.73	3.00	2.90	0	0	3.56	3.44	0		
40	1 1/2	48.3	1.65	1.93	1.65	1.93	2.77	3.16	2.77	3.16	3.00	3.35	0	0	3.68	4.11	0		
50	2	60.3	1.65	2.42	1.65	2.42	2.77	3.99	2.77	3.99	3.5	4.90	0	0	3.91	5.52	0		
65	2 1/2	73.0	2.11	3.75	2.11	3.75	3.05	5.34	3.05	5.34	3.5	6.00	0	0	5.16	8.77	0		
80	3	88.9	2.11	4.59	2.11	4.59	3.05	6.56	3.05	6.56	4.00	8.37	0	0	5.19	11.47	0		
90	3 1/2	101.6	2.11	5.25	2/11	5.25	3.05	7.53	3.05	7.53	4.00	9.62	0	0	5.74	13.78	0		
100	4	114.3	2.11	5.93	2.11	5.93	3.05	8.50	3.05	8.50	4.5	12.18	0	0	6.02	6.32	0		
125	5	141.3	2.77	9.61	2.77	9.61	3.40	11.74	3.40	11.74	5.00	16.80	0	0	6.55	22.10	0		
150	6	168.3	2.77	11.47	2.77	11.47	3.40	14.04	3.40	14.04	5.5	22.08	0	0	7.11	28.69	0		
200	8	219.1	2.77	15.00	2.77	15.00	3.76	20.77	3.76	20.27	6.35	33.82	7.04	37.38	8.18	43.20	0		
250	10	273.1	3.40	22.95	3.40	22.95	4.19	28.20	4.19	28.20	6.35	42.41	7.80	51.81	9.27	61.22	0		
300	12	323.9	3.96	31.72	4.19	33.60	4.57	36.54	4.57	36.54	6.35	50.48	8.38	66.20	9.53	75.01	10.31		
350	14	355.6	3.96	34.86			4.78	41.99	6.35	55.53	7.92	68.95	9.53	82.58	9.53	82.58	11.13		
400	16	406.4	4.19	42.20			4.78	48.07	6.35	63.61	7.92	79.03	9.53	94.70	9.53	94.70	12.70		
450	18	457.2	4.19	47.46			4.78	54.15	6.35	71.69	7.92	89.10	11.13	124.32	9.53	106.83	14.27		
500	20	508.0	4.78	60.23			5.54	69.70	6.35	79.76	9.53	118.93	12.70	157.51	9.53	118.9	15.06		
550	22	558.8	4.78	65.95			5.54	76.75	6.35	87.84	9.53	131.07	12.70	173.66	9.53	131.07	15.88		
600	24	609.6	5.54	83.82			6.35	95.92	6.35	95.92	9.53	143.20	14.27	212.72	9.53	143.20	17.45		
650	26	660.4									7.92	129.40	12.70	205.97		9.53	155.32		
700	28	711.2									7.92	139.47	12.70	222.13	15.88	276.48	9.53	167.44	
750	30	762.0	6.35	120.15			7.92	149.55	7.92	149.55	12.70	238.28	15.88	296.68	9.53	179.56			
800	32	812.8									7.92	159.62	12.70	254.44	15.88	316.88	9.53	191.69	17.48
850	34	863.6									7.92	169.64	12.70	270.50	15.88	336.96	9.53	203.74	17.48
900	36	914.4									7.92	179.77	12.70	286.75	15.88	357.28	9.53	215.93	19.05

## Stainless Steel Pipes Dimension

NOMINAL WALL THICKNESS																					
		SCH. 60		SCH. 80S		SCH. 80		SCH. 100		SCH. 120		SCH. 140		SCH. 160		SCH. XXS					
WEIGHT KG/MTR	WALL THK	WEIGHT KG/MTR	WALL THK	WEIGHT KG/MTR	WALL THK	WEIGHT KG/MTR	WALL THK	WEIGHT KG/MTR	WALL THK	WEIGHT KG/MTR	WALL THK	WEIGHT KG/MTR	WALL THK	WEIGHT KG/MTR	WALL THK	WEIGHT KG/MTR	WALL THK	WEIGHT KG/MTR			
0	0	0	2.41	0.47	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	3.02	0.82	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	3.20	1.12	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	3.73	1.64	0	0	0	0	0	0	0	0	0	0	4.75	1.97	7.47	2.59			
0	0	0	3.91	2.93	0	0	0	0	0	0	0	0	0	0	5.54	2.93	7.82	3.69			
0	0	0	4.55	3.29	0	0	0	0	0	0	0	0	0	0	6.35	4.30	9.09	5.53			
0	0	0	4.85	4.53	0	0	0	0	0	0	0	0	0	0	6.35	5.69	9.70	7.88			
0	0	0	5.05	5.49	0	0	0	0	0	0	0	0	0	0	7.14	7.35	10.16	9.69			
0	0	0	5.54	7.60	0	0	0	0	0	0	0	0	0	0	8.71	11.26	11.07	13.65			
0	0	0	7.01	11.59	0	0	0	0	0	0	0	0	0	0	9.53	15.15	14.02	20.72			
0	0	0	7.62	15.51	0	0	0	0	0	0	0	0	0	0	11.13	21.67	15.24	28.11			
0	0	0	8.08	18.92	0	0	0	0	0	0	0	0	0	0			16.15	34.56			
0	0	0	8.56	22.66	0	0	0	0	0	0	0	0	11.13	28.75	0	0	13.49	34.05	17.12	41.66	
0	0	0	9.53	31.44	0	0	0	0	0	0	0	0	12.70	40.90	0	0	15.88	49.87	19.05	58.31	
0	0	0	10.97	43.21	0	0	0	0	0	0	0	0	14.27	55.03	0	0	18.24	68.53	21.95	79.1	
0	10.81	53.90	12.70	65.63	0	0	15.06	76.93	18.24	91.73	20.62	102.47	23.01	112.92	22.23	108.00					
0	12.20	82.80	12.70	82.80	15.06	97.27	18.24	116.38	21.41	134.90	25.40	157.51	28.58	174.92	25.40	155.5					
80.94	14.27	110.62	12.70	98.95	17.45	133.88	21.41	162.14	25.40	189.82	28.58	211.31	33.32	242.40	25.40	189.82					
96.00	15.06	128.42	12.70	109.04	19.05	160.54	23.80	197.74	27.76	227.88	31.75	257.47	35.71	286.04							
125.20	16.66	162.59	12.70	125.20	21.41	206.40	26.19	249.34	30.94	290.88	36.53	338.32	40.46	370.74							
158.27	19.05	209.00	12.70	141.35	23.80	258.29	29.36	314.54	34.93	369.34	39.67	414.74	45.24	466.67							
185.89	20.62	251.65	12.70	157.51	26.19	315.97	32.54	387.41	38.10	448.30	44.45	515.94	49.99	573.31							
216.04	22.23	298.55	12.70	173.66	28.57	379.70	34.92	387.41	41.27	535.17	47.62	609.30	53.97	682.57							
258.74	24.59	360.21	12.70	189.82	30.94	448.30	38.89	457.83	46.02	694.44	52.37	730.72	59.51	819.70							
			12.70	205.97																	
					12.70	222.13															
					12.70	238.28															
348.11					12.70	254.44															
370.22					12.70	270.50															
427.09					12.70	286.75															

(24.66D-t)  
1000  
Wt/pam + formula  
Weight stainless steel pipe  
OD (mm) - W.T. (mm) XW.T. (mm) X 0.02466 + kg. per mtr.

# Seamless Pipe Fittings

A pipe fitting is used in the plumbing system to join multiple pipes of the same size or different sizes, to regulate the flow or to measure the flow. Common types of pipe fittings include couplings, elbows, tees, crosses, flanges and unions.

Pipe Fittings are used in various applications due to its strength, flexibility, very good flow rates and high chemical resistance. Pipe Fittings are used in a wide range of applications some of which include Chemical / Petrochemical industries, Food, Beverage, and Dairy Industry, Oil and Gas, Power Generation, Pulp and Paper, Marine & dredging, Sanitation. In all these industries pipes are used to transfer liquid, gas, slurries, and other solids and fluids from one area to another and accordingly different categories of pipe fittings are used. Thus, pipe fittings play a vital role in the proper functioning of pipe and tubes in various applications.



Materials	ASTM/UNS	EN10216/DIN	Outer Diameter	Wall Thickness	Standard
Austenitic	304/S30400	1.4301/X5CrNi 18-10	13.7-323mm DN8-DN550	1.65-60mm Sch5s- SchXXS	ASTM A403 ASTM A815 EN 10253-4
	304L/S30403	1.4306/X2CrNi 19-11			
	304H/S30409	1.4948/X6CrNi 18-10			
	316/S31600	1.4401/X5CrNiMo 17-12-2	1/8" - 12"		
	316L/S31603	1.4404/X2CrNiMo 17-12-2			
	316H/S31609	1.4436/X3CrNiMo 17-13-3			
	321H/S32100	1.4541/X6CrNiTi 18-10	13.7-323mm DN8-DN550	-	
	321H/S32109	1.4878/ X8CrNiTi 18-10			
	317L/31703	1.4438/X2CrNiMo 18-15-4	1/8" - 12"		
	310S/S31008	1.4845/X12CrNi 25-21			
Duplex Steel	904L/N08904	1.4539/X1CrNiMoCu 25-20-5	13.7-323mm DN8-DN550	-	
	S31254/254SMO	1.45475/X1 Crnimoncum 20-18-7			
	2205/S32205	1.4462/X2 CrNiMoN 22-5-3			
	2507/S32750	1.4410/X2CrNiMoN 25-7-4	1/8" - 12"		

## Types of Fittings

Various types of pipe fittings are available in plumbing systems for different purposes and functions. Types of Pipe Fittings include Elbow, Reducer, Tee type, Cross type, Coupling, Unions, Adaptors, Olet, Plug, and Cap.



## Production Equipment

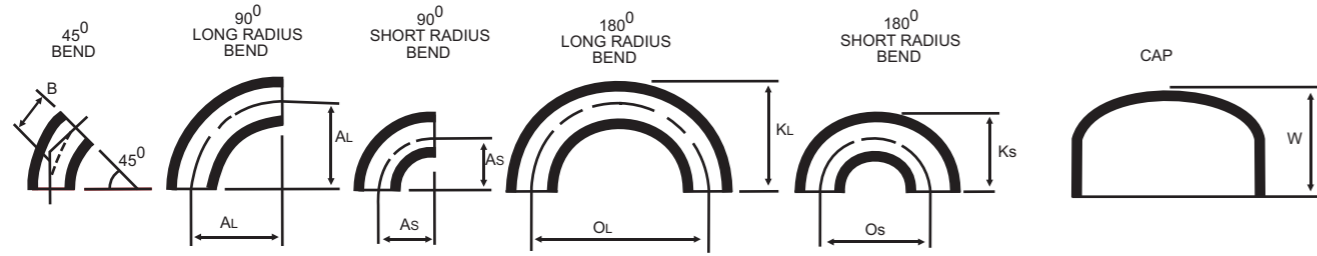
Machine Type	Quantity
Type300 Mandrel	1
Type200 Mandrel	1
Type80 Mandrel	1
500tons Hydraulic Press	1
3.5tons Hydraulic Press	1
CNC Plasma Cutting Machine	1
Argon Arc welding Machine	1
Type 40 Lathe	1
Type 30 Lathe	1
Numerical Control Laser Machine	1
CNC Lathe 6150	1



## Fitting Sizes

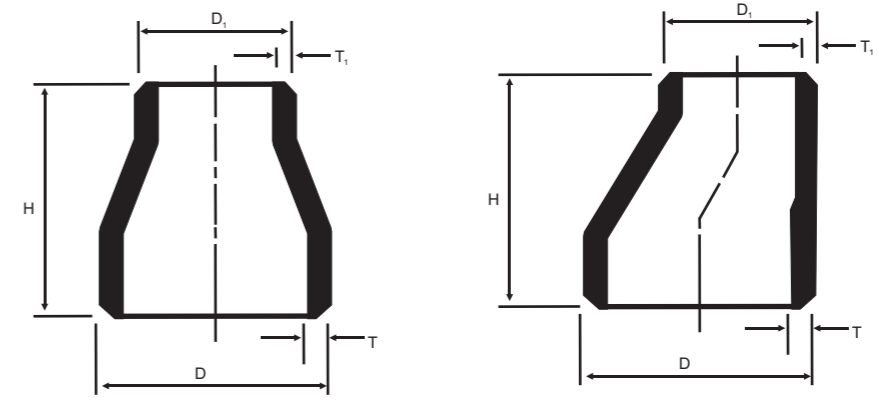
Pipe Fittings are sized with respect to pipe size. In Nominal pipe size (NPS) & also as a Diameter Nominal (DN). Thicknesses are marked in schedule no. Fittings generally have a higher thickness than the pipe to avoid any rejection due to thickness reduction during manufacturing.

## BUTT WELDING ELBOW



NOM. PIPE SIZE		O.D.	45° BEND	90° BEND LONG RAD	90° BEND SHORT RAD	180° BEND LONG RAD	180° BEND SHORT RAD	THICKNESS t					
IN	MM	D	B	AL	A <sub>SL</sub>	O	K <sub>L</sub>	O <sub>S</sub>	K <sub>S</sub>	SCH 10	SCH 40	SCH 80	CAPS E
1/2	15	21.30	16	38		76	49			2.11	2.77	3.73	25.0
3/4	20	26.67	11	29		57	43			2.11	2.87	3.91	25.0
1	25	33.40	22	38	25	76	56	51	41	2.77	3.38	4.55	38.0
1 1/4	32	42.20	25	48	32	95	70	64	52	2.77	3.56	4.85	38.0
1 1/2	40	48.30	29	57	38	114	83	76	62	2.77	3.68	5.08	38.0
2	50	60.30	35	76	51	152	106	102	81	2.77	3.9	5.55	38.0
2 1/2	65	73.00	44	95	64	191	132	127	100	3.05	5.16	7.01	38.0
3	80	88.90	51	114	76	229	159	152	121	3.05	5.49	7.62	51.0
4	100	114.30	64	152	102	305	210	203	159	3.05	6.02	8.55	64.0
5	125	141.30	79	190	127	381	262	254	197	3.40	6.55	9.53	76.0
6	150	168.30	95	229	152	457	313	305	237	3.40	7.11	10.97	89.0
8	200	219.10	127	305	203	610	414	406	313	3.76	8.18	12.7	102.0
10	250	273.00	159	381	254	762	518	508	391	4.19	9.27	15.09	127.0
12	300	323.90	190	457	305	914	619	610	467	4.57	10.31	17.48	152.0
14	350	355.60	222	533	356	1067	711	711	533	4.78	11.13	19.05	165.0
16	400	406.40	254	610	406	1219	813	813	610	4.78	12.70	21.44	178.0
18	450	457.20	286	686	457	1372	914	914	686	4.78	14.27	23.83	203.0
20	500	508.00	318	762	508	1524	1016	1016	762	5.54	15.09	26.19	229.0
24	600	609.60	381	914	610	1829	1219	1219	914	6.35	17.48	30.96	267.0

## BUTT WELDING REDUCERS-CENTRIC & ECCENTRIC



CONCENTRIC REDUCER

ECCENTRIC REDUCER

NOMINAL PIPE SIZE		D X D1	THICKNESS			
IN	MM		T X T1 Sch. 10	T X T1 Sch. 40	T X T1 Sch. 80	H
3/4 x 1/2	20 x 15	26.7 x 21.3	2.11 x 2.11	2.87 x 2.77	3.91 x 3.73	51
1 x 3/4	25 x 20	33.4 x 26.7	2.77 x 2.11	3.38 x 2.87	4.55 x 3.91	51
1 x 1/2	25 x 15	33.4 x 21.3	2.77 x 2.11	3.38 x 2.77	4.55 x 3.73	51
1 1/4 x 01	32 x 25	42.2 x 33.4	2.77 x 2.77	3.56 x 3.38	4.85 x 4.55	51
1 1/4 x 3/4	32 x 20	42.2 x 26.7	2.77 x 2.11	3.56 x 2.87	4.85 x 3.91	51
1 1/4 x 1/2	32 x 15	42.2 x 21.3	2.77 x 2.11	3.56 x 2.77	4.85 x 3.73	51
1 1/2 x 1 1/4	40 x 32	48.3 x 42.2	2.77 x 2.77	3.68 x 3.56	5.08 x 4.85	64
1 1/2 x 01	40 x 25	48.3 x 33.4	2.77 x 2.77	3.68 x 3.38	5.08 x 4.55	64
1 1/2 x 3/4	40 x 20	48.3 x 26.7	2.77 x 2.11	3.68 x 2.87	5.08 x 3.91	64
1 1/2 x 1/2	40 x 15	48.3 x 21.3	2.77 x 2.11	3.68 x 2.77	5.08 x 3.73	64
2.0 x 1 1/2	50 x 40	60.3 x 48.3	2.77 x 2.77	3.90 x 3.68	5.55 x 5.08	76
2.0 x 1 1/4	50 x 35	60.3 x 42.2	2.77 x 2.77	3.90 x 3.56	5.55 x 4.85	76
2.0 x 0.1	50 x 25	60.3 x 33.4	2.77 x 2.77	3.90 x 3.38	5.55 x 4.55	76
2.0 x 3/4	50 x 20	60.3 x 26.7	2.77 x 2.11	3.90 x 2.87	5.55 x 3.91	76
2 1/2 x 2.0	65 x 50	73.0 x 60.3	3.05 x 2.77	5.16 x 3.90	7.01 x 5.55	89
2 1/2 x 1 1/2	65 x 40	73.0 x 48.3	3.05 x 2.77	5.16 x 3.68	7.01 x 5.08	89
2 1/2 x 1.0	65 x 25	73.0 x 33.4	3.05 x 2.77	5.16 x 3.38	7.01 x 4.55	89
3.0 x 2 1/2	80 x 65	88.9 x 73.0	3.05 x 3.05	5.5 x 5.16	7.62 x 7.01	89
3.0 x 0.2	80 x 50	88.9 x 60.3	3.05 x 2.77	5.5 x 3.09	7.62 x 5.55	89
3.0 x 1 1/2	80 x 40	88.9 x 48.3	3.05 x 2.77	5.5 x 3.68	7.62 x 5.08	89
3.0 x 1 1/4	80 x 32	88.9 x 42.2	3.05 x 2.77	5.5 x 3.56	7.62 x 4.85	89
4.0 x 3.0	100 x 80	114.3 x 88.9	3.05 x 3.05	6.0 x 5.05	8.55 x 7.62	102
4.0 x 2 1/2	100 x 65	114.3 x 73.0	3.05 x 3.05	6.0 x 5.16	8.55 x 7.01	102
4.0 x 2.0	100 x 50	114.3 x 60.3	3.05 x 2.77	6.0 x 3.09	8.55 x 5.55	102
4.0 x 1 1/2	100 x 40	114.3 x 48.3	3.05 x 2.77	6.0 x 3.68	8.55 x 5.08	102
5.0 x 4.0	125 x 100	141.3 x 114.3	3.40 x 3.05	6.55 x 6.0		127