Sudesh Group

OUR RANGE MAKES US OMNIPRESENT.

OUR QUALITY MAKES US RECOGNIZED.

APLAPOLLO
Tubes for every reason

APL APOLLO TUBES LIMITED – A LEADING TUBE MANUFACTURING OF COMPANY

APL APOLLO TUBES LIMITED (formerly known as Bihar Tubes Limited) was conceived and promoted by founder chairman Mr. Sudesh Kumar Gupta. APL Apollo Tubes Limited (Sudesh Group of Industry) was incorporated more than two decades ago in 1986 and the Plant was set up, with the prior approval of D.G.T.D. & Ministry of Heavy Industry, Govt. of India at Sikandrabad Distt. Bulandshahar, U.P., (India). As there were various tube manufacturers, this project was conceived with a view to meet the diverse application for different industries and sectors domestically in and across the world. This was important to cater to the global demand and give satisfaction to all customers and associates. To achieve this stringent quality control and management, an in-house lab was put into place to carry out tests before the finished steel tubes leave the factory premises. To attain unparalleled position in global market, we got ISO Certification and also became an Export House having both CE and UL Certifications.

APL Apollo Tubes Limited markets its product under the brand APL Apollo which covers MS Black, G.I. Round pipes, Pre-Galvanized pipes, Hollow Sections both in Rectangular and Square Shapes & API Pipes rolled on High Frequency Induction Welding (HFIW) tube mills. These mills have been designed on latest technology provided by M/s Kusakabe of Japan who are the world leaders in welded Tube Mill technology. We have three mills at Unit – I, Sikandrabad (Uttar Pradesh) and three mills at Unit – II, Hosur (Tamil Nadu) having total installed capacity of 5, 00,000 MT per annum.

For MS Round Pipes, the present range of production is ½" to 12" with thickness ranging from 1.50mm to 10.00mm to various IS specifications such as IS : 1239, 1161, 3589, 4270, 3601 & 9295. In addition to this, we also roll tubes to American and British Standards i.e. BS : 1387, BS/EN 39, DIN 2439, 2440, 2441 & 2444; ASTM A-53, A-135, A- 795, EN 10255.

The present range of production for Hollow Sections is 25mm X 25mm to 250mm X 250mm and 25mm X 50mm to 300mm X 200mm, thickness ranging from 1.60mm to 10.00mm for Square Hollow Section & Rectangular Hollow Sections respectively to IS : 4923, A-500 & EN 10219-1 in various grades YST 210, 240, 310, 50 C and as per buyer's requirements in higher grades.
For API Pipes, the present range of production is 3" to 14", thickness upto 9.5mm as per 5L, 5CT with PSL - I & PSL - II functions, covering various grade also apart from standard tubes.






We are high on quality yet affordable, banking on technological marvel.

Sudesh Group

We manufacture a variety of steel tubes covering steel grades
(YST:210, 240; S:235, 275, 355; Q:195, 235,275; 50C)

Black & GI	Black : 12.7mm to 355.6mm (½ Inch to 14 Inches), thickness upto 10mm (0.393 Inch) GI : 12.7mm to 203.2mm (½ Inch to 8 Inches), thickness upto 10 mm (0.393 Inch)
Hollow Section	Square : 25X25mm (1X1 Inch) to 250X250 mm (10X10 Inches), thickness upto 10 mm(0.393 Inch) Rectangular : 40X20mm(1 ½ X 3/4 Inches) to 300X200mm (12X8 Inches), thickness upto 10 mm(0.393 Inch)
Pre-Galvanized	Square : 20X20mm (3/4 X3/4 Inch) to 80X80mm(3X3 Inches), thickness upto 2.6mm(0.102 Inch) Rectangular : 20X40mm(3/4X1 ½ Inches) to 100X50mm(4X2 Inches), thickness upto 2.6mm(0.102 Inch) Round : 12.7mm to 101.6mm (½ Inches to 4 Inches), thickness upto 2.6mm(0.102 Inch)
API	76.2 mm to 355.6 mm (2 ½ Inches to 14 Inches), thickness upto 9.5 mm (0.374 Inch) as per 5L, 5CT with PSL–I & PSL–II functions, covering various grades

SUDESH GROUP OF INDUSTRIES

PRINCIPAL UNITS

APL APOLLO TUBES LTD.
UNIT-I, SIKANDRABAD
UTTAR PRADESH

APL APOLLO TUBES LTD.
UNIT-II, HOSUR
TAMIL NADU

100% SUBSIDIARIES

APOLLO METALEX PVT. LTD.
SIKANDARABAD
UTTAR PRADESH

SHRI LAKSHMI METAL
UDYOG LTD.
BENGALURU, KARNATKA

LLOYDS LINE PIPES LTD.
MURBAD
MAHARASHRTA

• INSTALLED CAPACITY

125,000 MTPA	200,000 MTPA	30,000 MTPA	50,000 MTPA	90,000 MTPA

• PRODUCT MIX

➢ ERW Black Round	➢ ERW Black Round	➢ Coil Galvanizing facility	➢ Coil Galvanizing facility	➢ API Line Pipe & Casing Tubing
➢ Hollow Sections	➢ Hollow Sections	➢ Pre-Galvanized Tubes	➢ Pre-Galvanized Round / Hollow	➢ ERW Black Round
➢ Pre-Galvanized	➢ Pre-Galvanized	Round & Hollow	➢ Hot Dip Galvanized	➢ Hollow Sections
➢ Hot Dip Galvanized	➢ Hot Dip Galvanized		➢ Large Dia Black Round	➢ Hot Dip Galvanized


APL Apollo Tubes Limited (Unit - I, Sikandrabad)


APL Apollo Tubes Limited (Unit - II, Hosur)

APL APOLLO TUBES LIMITED

SUBSIDIARIES

SHRI LAKSHMI METAL UDYOG LIMITED

A perfect mix of innovation, technology and human proficiency, Shri Lakshmi Metal Udyog Limited is a subsidiary of APL Apollo Tubes Limited located at Bengaluru, the company caters to all the growing needs and demands of the market with the best resources in the industry. Starting commercial production of steel pipes and tubes in the year 2004, Shri Lakshmi Metal Udyog Limited is a young crew filled with passion and dynamism that specialize in manufacturing high precision ERW MS Round Black, GI Tubes & Pipes, Rectangle & Square Hollow Sections which are undoubtedly the first choice of the architects, agriculturists, builders, engineers and fabricators in the industry.

Owing to its highly developed production techniques and world class facilities, the company boasts of an extensive production capacity of around 50,000 MTPA. Needless to say that SLMUL delivers the best value proposition to its diverse customer needs.

APOLLO METALEX PRIVATE LIMITED

A 100% subsidiary of APL Apollo Tubes Limited and a fellow company of Shri Lakshmi Metal Udyog Limited, Apollo Metalex Private Limited or AMPL is a forerunner Galvanized Steel Fence Tubes manufacturer in India. Ever since its birth in the year 2006, it has been successfully manufacturing optimal quality products such as Hollow Steel Sections, Galvanized Steel Fence Tubes etc. for different sectors and industries. The company has one of the best infrastructures in the industry with highly qualified and skilled professionals and advanced production facilities. With a stern belief in achieving excellence in performance, optimum utilization, and sufficient productivity by high and dedicated endeavors, the company keeps impelling its quality control set up to cater to the industrial requirements fulfilling both Indian and International quality parameters.

LLOYDS LINE PIPES LIMITED

A 100% subsidiary of APL Apollo Tubes Limited, Lloyds Line Pipes Limited or LLPL is one of the pioneer and most versatile manufacturer of API Pipes in India with High Frequency Induction Welding Process (HFIW), serving Oil and Gas Refineries terminal, POL Depot, Construction and many other demanding markets.

The Lloyds Line Pipes Limited has current range of ½" to 14". A commitment to quality is readily visible from the procurement of raw material to the finished product by the way of investment made in sophisticated Computer control technologies that allow the operators to monitor all the critical parameter including welding variables on a real term basis throughout the production cycle.

This capability has been a key factor in acceptance of Lloyds as a unique producer of Welded steel pipe by all Oil sector.

APPRECIATED BY YOU.
AWARDED BY THE EXPERTS.


DET NORSKE VERITAS
MANAGEMENT SYSTEM CERTIFICATE
APL Apollo Tubes Limited
ISO 9001:2008
ISO 9001 : 2008

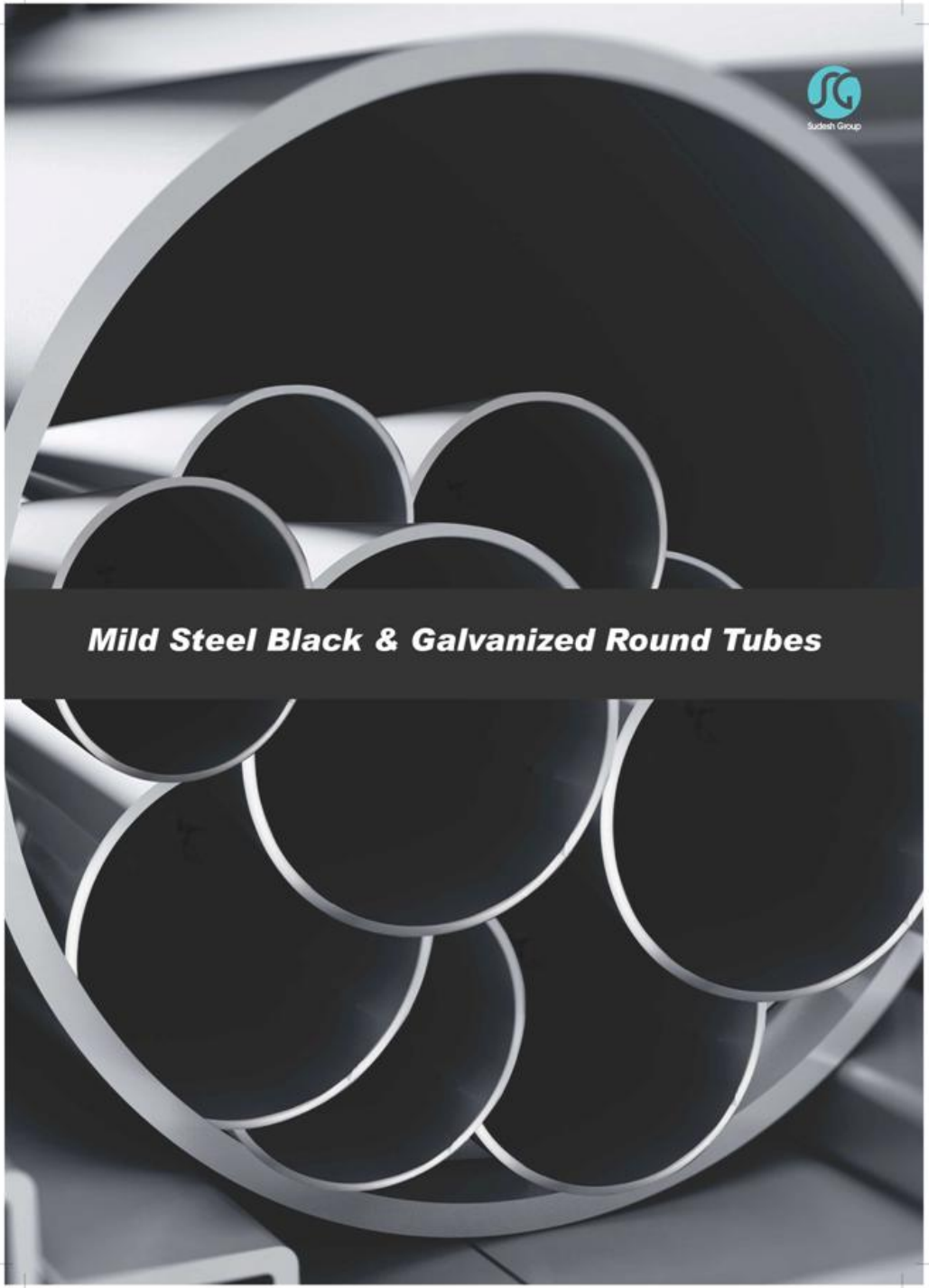

Certificate of Compliance
APL APOLLO TUBES LTD
METALLIC SPRINKLER PIPE
UL for USA


DET NORSKE VERITAS
MANAGEMENT SYSTEM CERTIFICATE
APL Apollo Tubes Limited
(Formerly known as Bihar Tubes Ltd.)
Unit-I
ISO 14001:2004
ISO 14001 : 2004


DET NORSKE VERITAS
EC CERTIFICATE OF FACTORY PRODUCTION CONTROL
STRUCTURAL STEELS
APL Apollo Tubes Limited
CE for EUROPE


DET NORSKE VERITAS
MANAGEMENT SYSTEM CERTIFICATE
APL Apollo Tubes Limited
(Formerly known as Bihar Tubes Ltd.)
Unit-I
OHSAS 18001:2007
OHSAS 18001 : 2007


SGS
SGS


Sudesh Group
Mild Steel Black & Galvanized Round Tubes

BEST QUALITY TUBES FROM BEST QUALITY EQUIPMENT

APL Apollo Tubes Limited is an integrated management system certified company covering ISO 9001 : 2008, ISO 14001 : 2004 and OHSAS 18001 : 2007 having strong domestic customer base and exports to over 25 countries. We believe that the best way to ensure quality maintenance is by installing equipments and adapting processes that are capable of producing it.

We have been living up to the continuously changing scenarios maintaining one of the best infrastructures in the industry. The superior quality black and galvanized steel tubes are produced on modern high speed tube mills based on the latest technology of world leader M/s Kusakabe of Japan. Apart from the complete in-house quality inspection facilities at various stages starting from procurement of raw material till final dispatch of finished goods, we have complete infrastructure of Coil Slitting, Tube Making, End Facing, Hydrotesting, Pickling & Galvanizing and Threading & Bundling.

Our mills are fully computerized and operate at a speed of 100 meters/minute ensuring steel tubes production with accurate roundness, straightness, length and strong weld joints. These mills possess quick size changing facility with spare cassettes whcih reduce the down time and enable us to deliver faster.

We have 'Online NDT' Eddy Current Testing which works in synchronization with automatic sorting system installed at our plant ensuring automatic segregation of Good Tubes and Bad Tubes. This system not only marks out the rejects but also ensures efficient monitoring of equipment performance and rejection levels.

While our customers get Eddy Current tested quality tubes, the constantly monitored quality index yields productivity advantage. Better yield because of low rejections give direct price competitiveness to our product.

With our in-built modern quality control systems WE NOT ONLY CHECK QUALITY, WE PRODUCE IT.

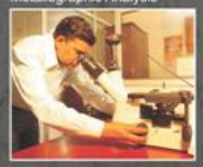
Tensile Test

Flattening Test

Steel Chemical Analysis

Micro Hardness Test

Metallographic Analysis



Hydrostatic Test

QUALITY ASSURANCE

To offer quality and reliability in form of optimum service to its customers is one of the cornerstones of the company's policy. This philosophy is well reflected in our work culture by continuously grooming and enhancing the skills of our workforce to ensure complete customer satisfaction through a corporate culture of total quality management. Inspections are carried out right from the procurement of raw material to the final shipment of the finished goods.

We are high on quality yet affordable, banking on technological marvel.

Sudesh Group

Product Range

APL Apollo Tubes Limited offers steel tubes and pipes as per following national and international standards.

Indian Standards

- IS : 1239 (part-1) / 2004 (Light, Medium & Heavy Series) Black & Galvanized plain end, screwed and socketed, 15 mm to 150 mm.

British Standards

- BS : 1387-1990, (Light, Medium & Heavy Series) Black & Galvanized Plain end, screwed and socketed.

TECHNICAL DATA OF BLACK & GALVANIZED PIPES
SPECIFICATION IS : 1239 (PART - 1) 2004 - DIN 2439, DIN 2440, DIN 2441
(EQUIVALENT BS : 1387 : 1985/EN 10255 : 2004*/EN 10240 : 1998/DIN 2444)

NB and Series	Outside Diameter		Wall Thickness		Nominal Weight			
					Black Pipes		Galvanized Pipes	
	Min	Max			Plain End		Screwed & Socketed	
	MM	MM	MM	SWG	Kg/M	Meters/Tonne	Kg/M	Meters/Tonne
15 L	21.0	21.4	2.0	14	0.95	1052	0.96	1046
M	21.0	21.8	2.6	12	1.21	826	1.22	820
H	21.0	21.8	3.2	10	1.44	694	1.45	690
20 L	26.4	26.9	2.3	13	1.38	725	1.39	719
M	26.5	27.3	2.6	12	1.56	641	1.57	637
H	26.5	27.3	3.2	10	1.87	535	1.88	532
25 L	33.2	33.8	2.6	12	1.98	505	2.00	500
M	33.3	34.2	3.2	10	2.41	415	2.43	411.5
H	33.3	34.2	4.0	8	2.93	341	2.95	339
32 L	41.9	42.5	2.6	12	2.54	394	2.57	389
M	42.0	42.9	3.2	10	3.10	322	3.13	319
H	42.0	42.9	4.0	8	3.79	264	3.82	262
40 L	47.8	48.4	2.9	11	3.23	310	3.27	306
M	47.8	48.8	3.2	10	3.56	281	3.60	278
H	47.9	48.8	4.0	8	4.37	229	4.41	227
50 L	59.6	60.2	2.9	11	4.08	245	4.15	241
M	59.7	60.8	3.6	9	5.03	199	5.10	196
H	59.7	60.8	4.5	7	6.19	161	6.26	160
65 L	75.2	76.0	3.2	10	5.74	175	5.83	171.5
M	75.3	76.6	3.6	9	6.42	156	6.54	153
H	75.3	76.6	4.5	7	7.93	126	8.05	124
80 L	87.9	88.7	3.2	10	6.72	149	6.89	145
M	88.0	89.5	4.0	8	8.36	120	8.53	117
H	88.0	89.5	4.8	6	9.90	101	10.10	96
100 L	113.0	113.9	3.6	9	9.75	102	10.00	100
M	113.1	115.0	4.5	7	12.20	82	12.50	80
H	113.1	115.0	5.4	5	14.50	69	14.80	67.5
125 M	138.5	140.8	4.8	6	15.90	63	16.40	61
H	138.5	140.8	5.4	5	17.90	56	18.40	54
150 M	163.9	165.5	4.8	6	18.90	53	19.50	51
H	163.9	166.5	5.4	5	21.30	47	21.90	46

Thickness & Mass are applicable for Black & Galvanized Steel Tubes as per clause 8.1.1 of IS : 1239 (part-1) 2004.

*** This specification conforms to CE Mark conferred by Det Norske Veritas, Netherlands.**

TOLERANCE

A Thickness	Tolerance	B Weight	Tolerance	Length Tolerance
1. Light Tubes	+ not limited - 8%	1. Single Tube (Light Series)	+10%-8%	
2. Medium and Heavy Tubes	+ not limited - 10%	2. Single Tube (Medium and Heavy Series)	±10%	Unless otherwise specified 4 to 7 mtrs. Can also be supplied in fix lengths. ±5cm.
		3. For quantities per load of 10 tonnes minimum (Light Series)	+7.5%-5%	
		4. For quantities per load of 10 tonnes minimum (Medium and Heavy Series)	±7.5%	

ERW STEEL TUBES FOR IDLERS FOR BELT CONVEYORS AS PER IS : 9295-1983
DIMENSIONS AND NOMINAL MASSES

Outside Diameter-MM	Thickness MM	Mass Kg./Mtr.	Meters/ Ton
63.50	3.65	5.39	186
	4.05	5.94	168
	4.50	6.55	153
	4.85	7.01	143
	5.40	7.74	129
	6.30	8.89	112
76.10	3.65	6.52	153
	4.05	7.20	139
	4.50	7.95	126
	4.85	8.52	117
	5.40	9.42	106
	6.30	10.84	92
88.90	4.05	8.47	118
	4.50	9.37	107
	4.85	10.05	99
	5.40	11.12	90
	6.30	12.83	78
101.60	4.05	9.74	103
	4.50	10.78	93
	4.85	11.57	86
	5.40	12.81	78
	6.30	14.81	68
114.30	4.50	12.19	82
	4.85	13.09	76
	5.40	14.50	69
127.0	4.50	13.59	74
	4.85	14.61	68
	5.40	16.19	62
	6.30	18.75	53
139.70	4.50	15.00	67
	4.85	16.13	62
	5.40	17.89	56
	6.30	20.73	48
152.40	4.50	16.41	61
	4.85	17.65	57
	5.40	19.58	51
	6.30	22.70	44
159.00	4.50	17.15	58
	4.85	18.44	54
	5.40	20.46	49
	6.30	23.72	42
165.10	4.50	17.82	56
	4.85	19.17	52
	5.40	21.27	47
	6.30	24.67	41
168.30	4.50	18.18	55
	4.85	19.55	51
	5.40	21.69	46
	6.30	25.17	40
193.70	5.40	25.08	40
	6.30	29.12	34
219.10	5.40	28.46	35
	6.30	33.06	40

Outside Diameter ± 0.8%
Ovality below 168.3mm : 0.5mm
Ovality including 168.3mm and above : 1.0mm
Weight Kg/Mtr : Single Tube : ± 10%
For Truck Load of 10 Tonnes : ± 7.5%
Thickness : ± 10%
Grade : ERW Grade YST 210 & YST 240

Sudesh Group

TECHNICAL DATA OF IS : 3601 1984 TUBES FOR MECHANICAL & GENERAL ENGG. PURPOSES

Size N.B.		Approx	Thickness	Wt.	Meter Per	Size N.B.		Approx	Thickness	Wt.	Metersper
MM	in	O.D. (MM)	(MM)	Kg/Mtr.	Ton	MM	Inch	O.D. (MM)	(MM)	Kg/Mtr.	Ton
15	½"	21.3	1.8	0.866	1155	50	2"	60.3	2.3	3.290	304
			2.0	0.952	1050				2.6	3.700	270
			2.6	1.200	833				2.9	4.110	243
			3.2	1.430	699				3.2	4.510	222
			4.0	1.710	585						
20	¾"	26.9	1.8	1.110	901				3.6	5.030	199
			2.0	1.230	813				4.0	5.550	180
			2.3	1.400	714				4.5	6.190	162
			2.6	1.560	641				5.0	6.820	147
			3.2	1.870	535				5.6	7.550	133
			4.0	2.260	442				6.3	8.390	119
25	1"	33.7	2.0	1.560	641	65	2.5"	76.1	2.6	5.240	191
			2.3	1.780	562				2.9	5.750	174
			2.6	1.990	503				3.2	6.440	155
			3.2	2.410	415				3.6	7.110	141
			4.0	2.930	341				4.5	7.950	126
			4.5	3.240	309				5.0	8.770	114
32	1.25"	42.4	2.3	2.270	441	80	3"	88.9	5.4	9.420	106
			2.6	2.550	392				6.3	10.800	93
			3.2	3.090	324				7.1	12.100	83
			3.6	3.440	291				2.9	6.15	163
			4.0	3.790	264				3.2	6.76	148
			5.0	4.610	217				4.0	8.38	119
			5.4	4.930	203				5.0	10.3	97
40	1.5"	48.3	2.3	2.610	383				5.4	11.1	90
			2.6	2.930	341				5.6	11.5	87
			2.9	3.250	308				6.3	12.8	78
			3.2	3.560	281				8.0	16.0	63
			4.0	4.370	229						
			4.9	5.230	191						
			5.0	5.340	187						
			5.6	5.900	170						
			5.9	6.160	162						

Grade : ERW-WP-100

Note: These sizes would be included in our Regular range of Production in the near future. Sizes and Thickness other than listed above can be supplied on order to order basis.

STEEL TUBES FOR STRUCTURAL PURPOSES CONFORMING TO IS : 1161 : 1998

N.B.	Series	Outside Diameter	Thickness	Nominal Weight Black Tube Plain End		Calculated Nominal Weight Galvanized Tubes Plain End	
		MM	MM	Kg/M	Meters/Tonne	Kg/M	Meters/Tonne
15	L	21.30	2.00	0.947	1056	1.00	1003
	M		2.60	1.21	826	1.26	794
	H		3.20	1.44	694	1.49	671
20	L	26.90	2.30	1.38	725	1.43	699
	M		2.60	1.56	641	1.61	621
	H		3.20	1.87	535	1.92	521
25	L	33.70	2.60	1.98	505	2.03	493
	M		3.20	2.41	415	2.46	407
	H		4.00	2.93	341	2.98	336
32	L	42.40	2.60	1.54	394	2.62	382
	M		3.20	3.10	323	3.18	314
	H		4.00	3.79	264	3.87	258
40	L	48.30	2.90	3.23	310	3.34	299
	M		3.20	3.56	281	3.67	272
	H		4.00	4.37	229	4.48	223
50	L	60.30	2.90	4.08	245	4.20	238
	M		3.20	5.03	199	5.15	194
	H		4.00	6.19	162	6.31	158
65	L	76.10	3.20	5.71	175	5.86	171
	M		3.60	6.42	156	6.57	152
	H		4.50	7.93	126	8.10	123
80	L	88.90	3.20	6.72	149	6.90	145
	M		4.00	8.36	120	8.54	117
	H		4.80	9.90	101	10.08	99
90	L	101.60	3.60	8.70	115	8.97	111
	M		4.00	9.63	144	7.20	139
	H		4.80	11.50	87	11.77	85
100	L	114.30	3.60	9.75	103	9.97	100
	M		4.50	12.20	82	12.42	81
	H		5.40	14.50	69	14.72	68
110	L	127.00	4.50	13.60	74	13.90	72
	M		4.80	14.50	69	14.80	68
	H		5.40	16.20	62	14.80	61
125	L	139.70	4.50	15.00	67	15.25	66
	M		4.80	15.90	63	16.15	62
	H		5.40	17.90	56	18.15	55
135	L	152.40	4.50	16.40	61	16.78	60
	M		4.80	17.50	57	77.88	56
	H		5.40	19.60	51	19.98	55
150	L	165.10	4.50	17.80	56	18.20	55
	M		4.80	18.90	52	19.80	51
	H		5.40	21.30	47	21.70	46
150	L	168.30	4.50	18.20	55	18.66	54
	M		4.80	19.40	52	19.86	50
	H1		5.40	21.70	46	22.24	45
	H2		6.30	25.20	40	41.00	24
175	L	193.70	4.80	22.40	45	22.94	44
	M		5.40	25.10	40	25.64	39
	H		5.90	27.30	37	27.84	36
200	L	219.10	4.80	25.40	39	25.95	39
	M		5.60	29.50	34	30.05	33
	H		5.90	31.00	32	31.55	32
225	H	244.50	5.90	34.70	29	35.36	28
250	H	273.00	5.90	38.90	26	39.68	25
300	H	323.90	6.30	49.30	20	50.28	20
350	H	355.60	8.00	68.60	15	69.58	14

TENSILE PROPERTIES:

Grade	Y.S.(min) MPA (kg/mm2)	T.S.(min) MPA (kg/mm2)	% Elongation
YST-210	210(21.42)	330(33.66)	20
YST-240	240(24.48)	410(41.82)	17
YST-310	310(31.62)	450(45.90)	14

WEIGHT — **TOLERANCES**

SINGLE TUBE

1. LIGHT CLASS — + 10% / - 8%
2. MEDIUM & HEAVY CLASS — + /- 10%

TOLERANCES:

1. ON OUTSIDE DIAMETER UP TO & INCLUDING 48.3 MM = +0.4MM/ -0.8MM
2. OVER 48.3 MM = +/- 1%.

THICKNESS: — **TOLERANCES**

FOR ALL SIZE — + NOT LIMITED

WELDED TUBES — -10%

10 TON LOT

1. LIGHT CLASS — +/- 5%
2. MEDIUM & HEAVY CLASS — +/- 7.5%

Sudesh Group

ERW STEEL TUBES FOR WATER & SEWAGE PURPOSE CONFORMING TO IS : 3589/2001

N.B. Size	Out Side Diameter	Wall Thickness	Weight (Plain End)	
mm	mm	mm	Kg/m	M/Tonne
150	168.3	2.60	10.60	94
		3.20	13.00	77
		4.00	16.20	62
		4.50	18.20	55
		5.00	20.10	50
		6.30	25.20	40
175	193.7	2.60	12.30	81
		3.60	16.90	59
		4.50	21.00	48
		6.30	29.10	34
200	219.1	2.60	13.90	72
		3.60	19.10	52
		4.50	23.80	42
		6.30	33.10	30
250	273.0	3.60	23.90	42
		4.00	26.50	38
		5.00	33.00	30
		6.30	41.40	24
300	323.9	4.00	31.60	32
		4.50	35.40	28
		5.60	44.00	23
		7.10	55.50	18

TOLERANCES	
a. Outside diameter of pipe	± 0.75%
b. Ovality	= Max. 1%
c. Thickness	± 10%
d. Length Unless other specified, length are in single random length of 4 to 7 meter.	
e. Mass per Truck Load of 10 Monnes of above	± 7.5%

PHYSICAL PROPERTIES

Grade	T.S. MPa MIN	Y.S. MPa MIN	%age elongation of MIN
Fe 330	330	195	20
Fe 410	410	235	18

Note:

These are preferred OD & Thickness. Other sizes not included may be supplied as specified by purchaser.

ERW STEEL TUBES FOR WATER WELLS CONFORMING TO IS : 4270 / 2001 PLAIN END CASING PIPES / SCREWED AND SOCKETED CASING PIPES

N.B. Size	Outside Diameter	Wall Thickness	Nominal Weight		Socket OD	Socket Length (Min)
mm	mm	mm	Kg/m	M/Tonne	mm	mm
100	114.3	5.0	13.48	74	130.00	144.3
	114.3	5.4	14.5	69	157.00	120.6
125	141.3	5.0	16.80	59		
	141.3	5.4	18.1	55	184.00	127
		7.1	23.5	42.5		
150	168.3	5.4	20.13	50	211.16	152.4
	168.3	5.4	21.6	46		
		7.1	28.2	35.5	237.00	152.4
175	193.7	5.4	25.10	40		
	193.7	6.4	29.6	34	291.00	177.8
		8.0	36.6	27		
200	219.1	5.4	28.46	35	346.00	177.8
	219.1	6.4	33.6	30		
		8.0	41.6	24		
250	273.1	7.1	46.57	21		
	273.1	8.0	52.3	19		
		10.0	64.9	15		
300	323.9	7.1	55.47	18		
	323.9	8.0	62.3	16		
		10.0	77.4	13		

TOLERANCES	
a. Outside diameter of pipe	± 1.0%
b. Thickness Up to 406.4mm OD	(+) 15% (-) 12.5%
c. Weight - Single Tube	(+) 10% (-) 8%
d. Length Unless otherwise specified	4 to 7 mtrs

** There are preferred included OD and Thickness. Other sizes not include may be supplied as specified by purchaser.

PHYSICAL PROPERTIES

Grade	Y.S. (min) MPa (N/mm2)	T.S. (min) MPa (N/mm2)	%age MIN Elongation on 5.65/So=Gl.
Fe 410	235	410	15%

TECHNICAL DATA OF PIPES CONFORMING TO ASTM A-53* GR. A & B SCH. 20/40/80

Nominal Bore		Outside Diameter		Schedule	Wall Thickness		Weight of Black Pipes Plain End			No. of Pcs Per Bundle
mm	Inch	mm	Inch		mm	Inch	Kg/mtr	lbs/ft.	ft/Ton	
15	1/2	21.3	0.840	40	2.77	0.109	1.27	0.85	2592	120
				80	3.73	0.147	1.62	1.09	20230	
20	3/4	26.7	1.050	40	2.87	0.113	1.69	1.13	1945	90
				80	3.91	0.154	2.20	1.48	1490	
25	1	33.4	1.315	40	3.38	0133	2.50	1.68	1311	60
				80	4.55	0.179	3.24	2.17	1016	
32	1¼	42.2	1.660	40	3.56	0.140	3.39	2.27	967	42
				80	4.85	0.191	4.47	3.00	735	
40	1½	48.3	1.900	40	3.68	0.145	4.05	2.72	810	36
				80	5.08	0.200	5.41	3.63	607	
50	2	60.3	2.375	40	3.91	0.154	5.44	3.66	603	26
				80	5.54	0.218	7.48	5.03	438	
65	2½	73.0	2.875	40	5.16	0.203	8.63	5.80	380	18
				80	7.01	0.276	11.41	7.67	287	
80	3	88.9	3.500	40	5.49	0.216	11.29	7.58	291	14
				80	7.62	0.300	15.27	10.26	215	
90	3½	101.6	4.000	40	5.74	0.226	13.57	9.12	242	2
				80	8.08	0.318	18.63	12.52	176	
100	4	114.3	4.500	40	6.02	0.237	16.07	10.80	204	10
				80	8.56	0.337	22.32	15.00	147	
125	5	141.3	5.560	40	6.55	0.258	21.77	14.63	151	8
150	6	168.3	6.625	40	7.11	0.028	28.26	18.99	116	7
200	8	219.1	8.625	20	6.35	0.250	33.31	22.38	98	5
				30	7.04	0.277	36.31	24.72	89	
				40	8.18	0.322	42.55	28.58	77	

* This specification conforms to UL certification conferred by Underwriters Laboratories, USA

Tolerance

Outside Diameter	Pipe size upto & including DN40	+1-0.4mm
	Pipe size DN 50 or larger	+ 1-1%
	Thickness	-12.5 (max)
	Weight	+10%

Mechanical Properties

	Grade A	Grade B
Yield Strength	205 Mpa (Min)	240 Mpa (Min)
Tensile Strength	330 Mpa (Min)	415 Mpa (Min)
Elongation %	As per ASTM A-53, Table x 4.1, 4.2	

Chemical Properties	Composition, Max. %								
	Carbon	Manganese	Phosphours	Sulphur	Copper^	Nickel^	ChromiumA	MolybdenumA	VanadiumA
Grade A	0.25	0.95	0.05	0.045	0.50	0.4	0.4	0.15	0.08
				80	3.73	0.147	1.62	1.09	20230
Grade B	0.3	1.2	0.05	0.045	0.50	0.4	0.4	0.15	0.08

^The Total Composition for these five elements shall not exceed 1.00%

Galvanizing

Minimum	0.490 kg / Sq Mtr
Average	0.550 kg / Sq Mtr

Sudesh Group

APL Apollo Tubes Limited offers a broad range of high quality Scaffolding Components. The product range includes SCAFFOLD TUBES as per EN - 39. Scaffolding Components includes CUPLOCK SCAFFOLDING, WEDGELOCK SCAFFOLDING & SUPPORT TUBES, FITTINGS (COUPLERS) and FORMWORK COMPONENTS and ACCESSORIES as well as a vast range of other components.

Tubes Scaffolding are widely used for supporting man and materials, tools and tackles during construction, alteration, demolition and maintenance works because of their several advantages over conventional type of timber/bamboo scaffolding.

APL Apollo Tubes Limited offers Scaffolding Tubes which also includes a complete range of components that are strong, safe, durable and economical. These items are ideally suited for wide application in construction, maintenance, alteration and demolition of structures. These items are as.

SCAFFOLDING TUBES

Size		Thickness		Ovality		Weight	
inches	mm	inches	mm	inches	mm	inches	mm
1 1/2	48.3	0.126	3.2	0.02	0.5	2.392	3.56
1 1/2	48.3	0.157	4.0	0.02	0.5	2.937	4.37

TOLERANCES

Outside Diameter	Thickness	Weight
±0.5	+/- 10%	+/- 7.5% On Single Tube

STEEL GRADE : S235GT

MECHANICAL PROPERTIES

YIELD STRENGTH : 235 MPA MIN.
TENSILE STRENGTH : 340 / 520 MPA

CHEMICAL COMPOSITION

CARBON : 0.20% MAX.
SILICON : 0.05% MAX.
MANGANESE : 0.40% MAX.
PHOSPHOROUS : 0.040% MAX.
SULPHUR : 0.045% MAX.
ALUMINIUM : 0.02% MIN.

END FINISH : SQUARE CUT

STRAIGHTNESS : 1MM IN 500 MM

FLATTENING TEST : TWO STAGES
FLATTEN UPTO 75% OF TUBE DIA FOR WELD.
FLATTEN UPTO 60% OF TUBE DIA FOR MATERIAL.

ZINC COATING : **40 MICRONS MINIMUM OUTSIDE**

MARKING : EN 39-APL APOLLO TUBES - 3.2/4.0

DELIVERY CONDITION :
a) AS ROLLED CONDITON (WITHOUT PROTECTION)
b) HOT DIP GALVANIZED

ASTM A-795* (BLACK & GALVANIZED STEEL PIPES FOR FIRE PROTECTION)

Nominal Bore		Outside Diameter		SCH 10				No. of Pieces per Bundle	SCH 40/30*				No. of Pieces per Bundle
				Wall Thickness		Weight Plain End			Wall Thickness		Weight Plain End		
mm	Inch	mm	Inch	mm	Inch	Kg/mtr	lbs/ft.		mm	Inch	Kg/mtr	lbs/ft.	
20	¾	26.7	1.050	2.11	0.083	1.28	0.96	90	2.87	0.113	1.69	1.13	90
25	1	33.4	1.315	2.77	0.109	2.09	1.41	90	3.38	0.133	2.50	1.68	60
32	1¼	42.2	1.660	2.77	0.109	2.69	1.81	61	3.56	0.14	3.39	2.27	42
40	1½	48.3	1.900	2.77	0.109	3.11	2.09	61	3.68	0.145	4.05	2.72	36
50	2	60.3	2.375	2.77	0.109	3.93	2.64	37	3.91	0.154	5.45	3.66	26
65	2½	73.0	2.875	3.05	0.120	5.26	3.53	29	5.16	0.205	8.68	5.8	18
80	3	88.9	3.500	3.05	0.120	6.46	4.34	24	5.49	0.216	11.29	7.58	14
90	3½	101.6	4.000	3.05	0.120	7.41	4.98	21	5.74	0.226	13.58	9.12	12
100	4	114.3	4.500	3.05	0.120	8.37	5.62	19	6.02	0.237	16.09	10.8	10
125	5	141.3	5.563	3.40	0.134	11.58	7.78	10	6.55	0.258	21.79	14.63	8
150	6	168.3	6.625	3.40	0.134	13.85	9.3	10	7.11	0.28	28.29	18.99	7
200	8	219.1	8.625	4.78	0.188	25.26	16.96	5	7.04*	0.277	36.82	24.72	5

* This specification conforms to UL certification conferred by Underwriters Laboratories, USA

ASTM A 135 GRADE A & B (BLACK AND GALVANIZED STEEL PIPES)

Nominal Bore		Outside Diameter		SCH 10				No. of Pcs Per Bundle
				Wall Thickness		Weight Plain End		
mm	Inch	mm	Inch	mm	Inch	Kg/mtr	lbs/ft.	
20	3/4	26.7	1.050	2.11	0.083	1.28	0.96	90
25	1	33.4	1.315	2.77	0.109	2.09	1.41	90
32	1 1/4	42.2	1.660	2.77	0.109	2.69	1.81	61
40	1 1/2	48.3	1.900	2.77	0.109	3.11	2.09	61
50	2	60.3	2.375	2.77	0.190	3.93	2.64	37
65	2 1/2	73.0	2.875	3.05	0.120	5.26	3.53	29
80	3	88.9	3.500	3.05	0.120	6.46	4.34	24
90	3 1/2	101.6	4.000	3.05	0.120	7.41	4.98	21
100	4	114.3	4.500	3.05	0.120	8.37	5.62	19
125	5	141.3	5.563	3.40	0.134	11.58	7.78	14

Tolerance

Outside Diameter	Pipe size upto & including DN40		+1-0.4mm
	Pipe size DN 50 or larger		+ 1-1%
		Thickness	-12.5 (max)
		Weight	+10%

Mechanical Properties		
	Grade A	Grade B
Yield Strength	205 Mpa (Min)	240 Mpa (Min)
Tensile Strength	330 Mpa (Min)	415 Mpa (Min)
Elongation %	35	30

Chemical Properties				
	Carbon	Manganese	Phosphours	Sulphur
Grade A	0.25	0.05	0.035	0.035
Grade B	0.3	1.2	0.35	0.035

Galvanizing	
Minimum	0.490 kg / Sq Mtr
Average	0.550 kg / Sq Mtr

We are high on quality yet affordable, banking on technological marvel.

Pre-Galvanized Tubes

PRE – GALVANIZED TUBES

This category of steel tubes is generally made out of MS Galvanized Sheets. There are many preventive coatings (natural & synthetic) which are applied either before or after the production of tubes.

In the recent technological innovations and analysis by the experts, it has been proved that the tubes made by galvanized sheets are giving very good durability, stability, adherence as well as a longer sustainability without atmospheric corrosion. These technological phenomenon are adopted by the steel manufacturers for enhancing their market potential as well as the profitability as they have very optimum cost control parameters.

The coating is uniform and the thickness of the coating can be maintained as agreed between, which depends on the atmospheric and corrosive environment prevailing at individual sites. The overall look & finish is very aesthetically controlled. Having a homogeneous coating all through, these tubes can easily withstand any mechanical deformation without affecting their catalytic coating and the bonding of zinc coating with the parent material remains unchanged.

This gives a very good impression to the fence & green house fabricator. Strict in-house quality checking is performed which helps in maintaining all conditioning parameters as per the standards laid down.

Sudesh Group

FENCE FRAMEWORK

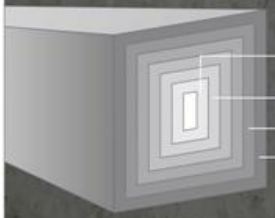
Size and Dimension Range

Fence O.D.	Doc. Equiv.	Wall Inches	Gauge	Weight lbs/ft	Pcs / Bundle
1 3/8"	1.315	.047	18	0.636	91
1 3/8"	1.315	.055	17	0.740	91
1 3/8"	1.315	.065	1	0.868	91
1 3/8"	1.315	.072	15	0.956	91
1 3/8"	1.315	.080	14	1.055	91
1 3/8"	1.315	.104	12	1.350	91
1 3/8"	1.315	.133	SCH.40	1.679	60
1 5/8"	1.660	.047	18	0.810	61
1 5/8"	1.660	.055	17	0.943	61
1 5/8"	1.660	.065	16	1.107	61
1 5/8"	1.660	.072	15	1.221	61
1 5/8"	1.660	.085	14	1.430	61
1 5/8"	1.660	.095	13	1.590	61
1 5/8"	1.660	.111	12	1.836	61
1 5/8"	1.660	.140	SCH.40	2.273	42
1 7/8"	1.900	.047	18	0.930	61
1 7/8"	1.900	.055	17	1.084	61
1 7/8"	1.900	.065	16	1.274	61
1 7/8"	1.900	.072	15	1.406	61
1 7/8"	1.900	.090	13	1.740	61
1 7/8"	1.900	.105	12	2.015	61
1 7/8"	1.900	.120	11	2.281	61
1 7/8"	1.900	.145	SCH.40	2.718	36
2 3/8"	2.375	.047	18	1.169	37
2 3/8"	2.375	.055	17	1.363	37
2 3/8"	2.375	.065	16	1.604	37
2 3/8"	2.375	.076	15	1.866	37
2 3/8"	2.375	.095	13	2.313	37
2 3/8"	2.375	.115	11	2.780	37
2 3/8"	2.375	.130	10	3.117	37
2 3/8"	2.375	.154	SCH.40	3.653	26
2 7/8"	2.875	.110	12	3.248	19
2 7/8"	2.875	.130	10	3.815	19
2 7/8"	2.875	.160	9	4.640	19
2 7/8"	2.875	.203	SCH.40	5.793	18
3 1/2"	3.500	.140	9	5.030	19
3 1/2"	3.500	.160	8	5.710	19
3 1/2"	3.500	.216	SCH.40	7.576	14
4"	4.000	.140	9	5.780	19
4"	4.000	.160	8	6.570	19
4"	4.000	.226	SCH.40	9.109	12
6 5/8"	6.625	.280	SCH.40	18.970	N/A
8 5/8"	8.625	.322	SCH.40	28.550	N/A

Note: These sizes would be included in our Regular range of Production in the near future. Sizes and Thickness other than listed above can be supplied on order to order basis.

We are high on quality yet affordable, banking on technological marvel.

Square & Rectangle
Industrial Fence Framework



APL Apollo Fence Framework offer the following integral specifications protection against corrosion & white rust

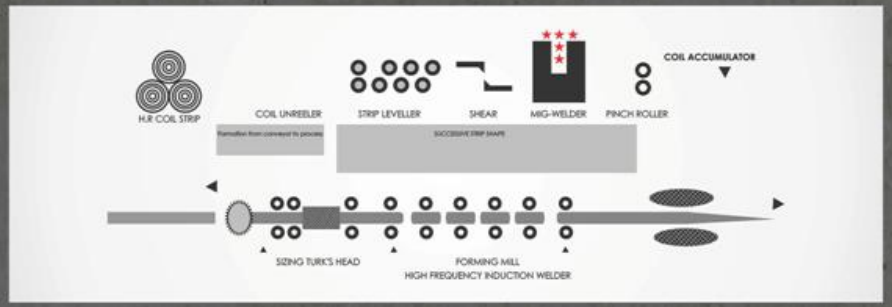
- **Zinc-rich interior coating** protects against the conditions build-up that cause pipe to catch rust from the inside
- **Strength of Steel** conforms to the minimum yield strength
- **Intermediate conversion coating** provides protection against white rust
- **UV clear organic coating** provides a smooth, lustrous finish

SHS/RHS
Closed Hollow Sections

APL APOLLO HOLLOW SECTIONS - SUPERIOR IS A WORD THAT FALLS SHORT WHEN IT COMES TO QUALITY

APL Apollo Tubes Limited markets its product under the brand APL Apollo which covers MS Black, G.I. Round pipes and Hollow Sections both in Rectangular and Square Quality rolled on High Frequency Induct Weld (HFIW) mills. These mills have been designed on latest technology provided by M/s Kusakabe of Japan who are the world leaders in welded Tube Mill technology. We have three mills at Unit – I, Sikandrabad and three mills at Unit – II, Hosur having total installed capacity of 5, 00,000 MT per annum.

THE PROCESS



STRUCTURAL PAR EXCELLENCE

- International quality raw material
- Enhanced physical strength provides decisive advantage
- Formed at modern HFIW mill under strict quality control.

UNIQUE STRENGTH & ECONOMY

- Increased tensile capacity because of concentric connection
- Increased compressive strength because of higher radius of gyration
- Full strength under bending moment due to superior torsional rigidity
- Enhanced shear capacity
- Multifold tensional capacity
- Lower wind drag
- Better fire resistance
- The best during earthquakes

COST BENEFIT

The Hollow Sections are perfect substitute for conventional angle and channels and the market is diversifying to adopt the sections for the reason of overall cost saving of 15%. In addition to this, the maintenance of these sections is very cheap and it has a better aesthetic look.

Sudesh Group

QUALITY

An ISO 9001 : 2008, ISO 14001 : 2004 & OHSAS 18001 : 2007 company, APL Apollo Tubes Limited boasts of manufacturing one of the best quality Hollow Sections (RHS/SHS) available in the market. The company has always been on its toes to keep up-to-the-minute with the latest requirements of the market & is incessantly posing its endeavors to meet the same. No wonder, APL Apollo Tubes Limited, is today a forerunner Hollow Sections manufacturer in India. Moreover, these premium quality Hollow Sections are rolled on the fast and high frequency induction weld mill that works on the latest technology from the world leaders M/s Kusakabe of Japan.

ADVANTAGE OF USING HOLLOW SECTIONS (RHS/SHS)

Hollow Sections (RHS/SHS manufactured by APL Apollo Tubes) command several techno-economic advantages over Conventional Structurals.

1. The raw Material for these structurals come from SAIL state-of-the-art Hot Strip Mill which manufactures Hot Rolled Coils comparable to the best in the world.
2. The excellent distribution of the materials around the axis of Hollow Sections exhibit remarkable strength qualities and thus offers decisive advantage as regards to application technology.
3. Due to their high torsional rigidity and attainment of substantial impact in the material, Hollow Sections behave more efficiently than conventional structurals.
4. Their higher strength to weight ratio result in up to 30% saving in steel.
5. The smooth, uniform profile of these sections minimizes corrosion and facilitates easy, at-site fabrication.
6. Hollow Sections also enhance the aesthetic appeal of structures.
7. Cold formed Hollow Section is a formed product whereas conventional structure is a rolled product, so the material ductility vis-a-vis with the strength remains stationary and uniform in cold formed Hollow Section which gives a very suitable calculation to the structural engineers/ consultants.

THE QUESTION OF INTERNAL CORROSION

Internal corrosion is further protected by applying the surface with any protective coating (preferably the polymer base or suitably passivated as a protection from surface oxidation/corrosion.

PROPERTIES OF APL APOLLO STRUCTURA (SHS)

IS : 4923 : 1997/EN 10219-1 : 2006*/ASTM A-500

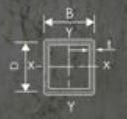
RHS D X B mm	Thickness t mm	Sec Area A cm²	Unit Wt W kg/m	Moment of Inertia Ixx cm⁴	Moment of Inertia Iyy cm⁴	Radius of Gyration rxx cm	Radius of Gyration ryy cm	Elastic Modulus zxx cm³	Elastic Modulus zyy cm³	Torsional Constants J cm⁴	Torsional Constants B cm³	Outer Surface Area per m m²
25 x 25	1.6	1.43	1.12	1.28	1.28	0.94	0.94	1.02	1.02	1.96	1.46	0.092
	2.0	1.74	1.36	1.48	1.48	0.92	0.92	1.19	1.19	2.29	1.68	0.090
	2.6	2.16	1.69	1.72	1.72	0.89	0.89	1.38	1.38	2.86	1.92	0.087
	3.2	2.53	1.98	1.89	1.89	0.86	0.86	1.51	1.51	2.96	2.07	0.084
32 x 32	2.0	2.30	1.80	3.36	3.36	1.21	1.21	2.10	2.10	5.30	3.05	0.118
	2.6	2.88	2.26	4.02	4.02	1.18	1.18	2.51	2.51	6.45	3.63	0.115
	3.2	3.42	2.69	4.54	4.54	1.15	1.15	2.84	2.84	7.41	4.07	0.112
38 x 38	2.0	2.78	2.18	5.88	5.88	1.46	1.46	3.10	3.10	9.31	4.54	0.142
	2.6	3.51	2.75	7.14	7.14	1.43	1.43	3.76	3.76	11.51	5.49	0.139
	3.2	4.19	3.29	8.18	8.18	1.40	1.40	4.30	4.30	13.45	6.28	0.136
	4.0	5.03	3.95	9.26	9.26	1.36	1.36	4.87	4.87	15.67	7.12	0.131
40 x 40	2.6	3.72	2.92	8.45	8.45	1.51	1.51	4.22	4.22	13.63	6.20	0.147
	2.9	4.09	3.21	9.11	9.11	1.49	1.49	4.56	4.56	14.85	6.68	0.145
	3.2	4.45	3.49	9.72	9.72	1.48	1.48	4.86	4.86	16.00	7.12	0.144
	4.0	5.35	4.20	11.07	11.07	1.44	1.44	5.54	5.54	18.75	8.12	0.139
49.5 x 49.5	2.6	4.70	3.69	16.91	16.91	1.90	1.90	6.83	6.83	27.19	10.11	0.185
	2.9	5.19	4.07	18.37	18.37	1.88	1.88	7.42	7.42	29.81	10.98	0.183
	3.6	6.28	4.93	21.42	21.42	1.85	1.85	8.66	8.66	35.54	12.81	0.179
	4.5	7.58	5.95	24.64	24.64	1.80	1.80	9.96	9.96	42.15	14.79	0.175
60 x 60	2.6	5.80	4.55	31.33	31.33	2.33	2.33	10.44	10.44	50.08	15.52	0.227
	2.9	6.41	5.03	34.21	34.21	2.31	2.31	11.40	11.40	56.12	16.95	0.225
	3.2	7.01	5.50	36.94	36.94	2.30	2.30	12.31	12.31	60.02	18.31	0.224
	4.0	8.55	6.71	43.55	43.55	2.26	2.26	14.52	14.52	72.41	21.62	0.219
	4.8	10.01	7.85	49.22	49.22	2.22	2.22	16.41	16.41	83.86	24.51	0.215
72 x72	3.2	8.54	6.71	66.32	66.32	2.79	2.79	18.42	18.42	106.81	27.47	0.272
	4.0	10.47	8.22	79.03	79.03	2.75	2.75	21.95	21.95	129.85	32.78	0.267
	4.8	12.31	9.66	90.31	90.31	2.71	2.71	25.09	25.09	151.55	37.55	0.263
80 x 80	3.2	9.57	7.51	92.71	92.71	3.11	3.11	23.18	23.18	148.55	34.60	0.304
	4.0	11.75	9.22	111.04	111.04	3.07	3.07	27.76	27.76	181.22	41.49	0.299
	4.8	13.85	10.87	127.58	127.58	3.04	3.04	31.89	31.89	212.26	47.77	0.295
91.5 x 91.5	3.6	12.32	9.67	156.49	156.49	3.56	3.56	34.21	34.21	251.17	41.14	0.347
	4.5	15.40	11.88	187.57	187.57	3.52	3.52	41.00	41.00	306.78	61.14	0.343
	5.4	17.85	14.01	215.68	215.68	3.48	3.48	47.14	47.14	359.76	70.77	0.338
100 x 100	4.0	14.95	11.73	226.35	226.35	3.89	3.89	45.27	45.27	364.75	67.50	0.379
	5.0	18.36	14.41	271.10	271.10	3.84	3.84	54.22	54.22	441.84	80.54	0.374
	6.0	21.63	16.98	311.47	311.47	3.79	3.79	62.29	62.29	511.80	92.06	0.369
113.5x113.5	4.8	20.28	15.92	393.30	393.30	4.40	4.40	69.30	69.30	637.45	103.89	0.429
	5.4	22.60	17.74	432.58	432.58	4.38	4.38	76.23	76.23	708.69	114.41	0.426
132 x 132	4.8	23.83	16.71	634.39	634.39	5.16	5.16	96.12	96.12	1018.30	144.11	0.503
	5.4	26.59	20.88	700.11	700.11	5.13	5.13	106.08	106.08	1134.25	159.18	0.500
150 x 150	4.0	22.95	18.01	807.82	807.82	5.93	5.93	107.71	107.71	1273.46	161.38	0.579
	5.0	28.36	22.26	982.12	982.12	5.89	5.89	130.95	130.95	1569.09	196.38	0.574
	6.0	33.63	26.40	1154.91	1154.91	5.84	5.84	152.7g	152.7g	1856.18	229.44	0.569
	7.0	38.78	30.44	1299.44	1299.44	5.79	5.79	173.26	173.26	2134.99	260.65	0.564
	8.0	43.79	44.38	1443.00	1443.00	5.74	5.74	192.40	192.40	2405.78	290.12	0.559
180 x 180	4.0	27.75	21.78	1421.74	1421.74	7.16	7.16	157.97	157.97	2224.31	236.76	0.699
	5.0	43.36	26.97	1736.87	1736.87	7.11	7.11	192.99	192.99	2747.93	289.40	0.694
	6.0	40.83	32.05	2036.52	2036.52	7.06	7.06	226.28	226.28	3259.23	339.65	0.689
	7.0	47.18	33.03	2321.04	2321.04	7.01	7.01	257.89	257.89	3758.53	387.59	0.684
	8.0	53.39	41.91	2590.73	2590.73	6.97	6.97	287.86	287.86	4246.16	433.32	0.679
220 x 220	4.0	34.15	26.61	2639.14	2639.14	8.79	8.79	239.92	239.92	4099.49	359.64	0.859
	5.0	42.36	33.25	3238.02	3238.02	8.74	8.74	294.37	294.37	5076.22	441.43	0.854
	6.0	50.43	39.59	3813.36	3813.36	8.70	8.70	346.67	346.67	6034.73	520.18	0.849
	7.0	58.38	45.83	4365.55	4365.55	8.65	8.65	396.67	396.67	6974.82	596.00	0.844
	8.0	66.19	51.96	4894.99	4894.99	8.60	8.60	445.00	445.00	7897.48	668.99	0.839
250 x 250*	4.0	38.95	30.57	3907.30	3907.30	10.02	10.02	312.58	312.58	6045.40	468.61	0.979
	5.0	48.36	37.96	4805.01	4805.01	9.97	9.97	384.40	384.40	7494.83	576.44	0.974
	6.0	57.63	45.24	5672.00	5672.00	9.92	9.92	453.76	453.76	8920.44	680.77	0.969
	7.0	66.78	52.42	6508.73	6508.73	9.87	9.87	520.70	520.70	10322.70	781.69	0.964
	8.0	75.79	59.50	7315.65	7315.65	9.82	9.82	585.25	585.25	11702.07	879.31	0.959

Note: These sizes would be included in our regular range of production in the near future. Sizes and Thickness other than listed above can be supplied on order to order basis.

* This specification conforms to CE Mark conferred by Det Norske Veritas, Netherlands.

OTHER ALLOWABLE STRESS VALUES (in MPa)

Steel Grade	Minimum Yield Stress	Minimum UTS	Axial Stress in Tension	Bending Stress in Ten of Compn.	Shear Stress	Bearing Stress	Equivalent Stress
Yst 210	210	330	–	–	–	–	–
Yst 240	240	410	144	158	108	180	216
Yst 310	310	450	186	205	140	232	279



Note: Minimum % Elongation: 10% for GR. Yst 310 ^ 15% for GR. Yst 240 & 20 % for Yst 210

Sudesh Group

PROPERTIES OF APL APOLLO STRUCTURA (RHS)

IS : 4923 : 1997/EN 10219-1 : 2006*/ASTM A-500

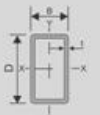
RHS D X B mm	Thickness t mm	Sec Area A cm²	Unit Wt W kg/m	Moment of Inertia Ixx cm⁴	Iyy cm⁴	Radius of Gyration rxx cm	ryy cm	Elastic Modulus zxx cm³	zyy cm³	Torsional Constants J cm⁴	B cm³	Outer Surface Area per m m²
50 x 25	2.0	2.74	2.15	8.38	2.81	1.75	1.01	3.35	2.25	6.97	3.79	0.142
	2.6	3.46	2.71	10.16	3.36	1.71	0.99	4.06	2.69	8.27	4.53	0.137
	3.2	4.13	3.24	11.63	3.80	1.68	0.96	4.35	3.04	9.52	5.12	0.134
	4.0	4.95	3.88	13.13	4.23	1.63	0.92	5.25	3.38	10.86	5.69	0.129
60 x 40	2.6	4.76	3.73	22.76	12.09	2.19	1.59	7.59	6.05	25.59	9.83	0.187
	2.9	5.25	4.12	24.74	13.11	2.17	1.58	8.25	6.56	28.02	10.66	0.185
	3.6	6.35	4.98	28.90	15.23	2.13	1.55	9.63	7.62	33.30	12.41	0.181
	4.5	7.67	6.02	33.31	17.44	2.08	1.51	11.10	8.72	39.34	14.29	0.177
66 x 33	2.6	4.70	3.69	25.15	8.43	2.31	1.34	7.62	5.11	20.75	8.71	0.185
	2.9	5.19	4.07	27.33	9.12	2.29	1.33	8.28	5.53	22.65	9.43	0.183
	3.6	6.28	4.93	31.87	10.52	2.25	1.29	9.66	6.37	26.71	10.90	0.179
	4.5	7.58	5.95	36.64	11.93	2.20	1.25	11.10	7.23	31.21	12.43	0.175
80 x 40	2.6	5.80	4.55	46.58	15.74	2.84	1.65	11.65	7.87	38.50	13.46	0.227
	2.9	6.41	5.03	50.87	17.11	2.82	1.63	12.72	8.56	42.23	14.66	0.225
	3.2	7.01	5.50	54.94	18.41	2.80	1.62	13.74	9.21	45.83	15.78	0.224
	4.0	8.55	6.71	64.79	21.49	2.75	1.59	16.20	10.74	54.77	18.49	0.219
	4.8	10.01	7.85	73.22	24.03	2.71	1.55	18.30	12.02	62.81	20.79	0.215
96 x 48	3.2	8.54	6.71	98.61	33.28	3.40	1.97	20.54	13.87	82.13	23.82	0.272
	4.0	10.47	8.22	117.54	39.32	3.35	1.94	24.49	16.38	99.11	28.24	0.267
	4.8	12.31	9.66	134.35	44.55	3.30	1.90	27.99	18.56	114.80	32.14	0.263
100 x 50	3.2	8.93	7.01	112.29	37.95	-	-	-	-	-	-	-
	4.0	10.95	8.59	134.14	44.95	-	-	-	-	-	-	-
122 x 61	3.6	12.32	9.67	232.61	78.83	4.34	2.53	38.13	25.84	193.91	44.50	0.347
	4.5	15.14	11.88	278.94	93.78	4.29	2.49	45.73	30.75	235.39	53.13	0.343
	5.4	17.85	14.01	320.83	107.03	4.24	2.45	52.60	35.09	347.29	60.89	0.338
120 x 60	3.2	10.85	8.51	199.88	67.95	4.29	2.50	33.31	22.65	165.83	28.95	0.344
	3.6	12.11	9.5	220.75	74.77	4.27	2.48	36.79	24.92	184.10	42.91	0.341
	4.5	14.87	11.67	264.52	88.88	4.22	2.44	44.09	29.63	223.34	51.19	0.337
145 x 82	4.8	20.28	15.92	555.16	228.50	5.23	3.36	76.57	55.73	534.27	94.45	0.429
	5.4	22.60	17.74	610.85	250.59	5.20	3.33	84.26	61.12	592.70	103.81	0.426
172 x 92	4.8	23.83	18.71	917.13	346.91	6.20	3.82	106.64	75.41	826.04	128.85	0.503
	5.4	26.59	20.88	1012.47	381.74	6.17	3.79	117.73	82.99	918.10	142.04	0.500
200 x 100	4.0	22.95	18.01	1199.71	410.78	7.23	4.23	119.97	82.16	991.47	141.46	0.579
	5.0	28.36	22.26	1459.25	496.94	7.17	4.19	145.93	99.39	1216.96	171.53	0.574
	6.0	33.63	26.40	1703.31	576.91	7.12	4.14	170.33	115.38	1434.03	199.68	0.569
	7.0	38.78	30.44	1932.19	650.93	7.06	4.10	193.22	130.19	1642.92	226.04	0.564
	8.0	43.79	34.38	2146.21	719.19	7.00	4.05	214.62	143.84	1843.86	250.68	0.559
220 x 140	4.0	27.75	21.78	1892.55	947.64	8.26	5.84	172.05	135.38	2000.01	223.99	0.699
	5.0	34.36	26.97	2313.36	1155.23	8.21	5.80	210.31	165.03	2467.63	273.47	0.694
	6.0	40.83	32.05	2713.97	1351.66	8.15	5.75	246.72	193.09	2922.95	320.55	0.689
	7.0	47.18	37.03	3094.76	1537.22	8.10	5.71	281.34	219.60	3366.29	365.35	0.684
240 x 120	4.0	27.75	21.78	2110.72	725.35	8.72	5.11	175.89	120.89	1736.39	208.03	0.699
	5.0	34.36	26.97	2579.67	882.47	8.67	5.07	214.97	147.08	2138.48	253.55	0.694
	6.0	44.83	32.05	3025.91	1030.45	8.61	5.02	252.16	171.74	2528.39	296.70	0.689
	7.0	47.18	37.03	3449.84	1169.52	8.55	4.98	287.49	194.92	2906.43	337.58	0.684
	8.0	53.39	41.91	3851.84	1299.95	8.49	4.93	320.99	216.66	3272.90	376.29	0.679
	9.0	59.47	46.69	4232.30	1422.00	8.44	4.89	352.69	237.00	3628.08	412.93	0.674
	10.0	65.42	51.36	4591.59	1535.91	8.38	4.85	382.63	255.99	3972.25	447.57	0.688
260 x 180*	4.0	34.15	26.81	3357.53	1917.45	9.92	7.49	258.27	213.05	3822.78	346.87	0.859
	5.0	42.36	33.25	4121.36	2349.53	9.86	7.45	317.03	261.06	4730.34	425.47	0.854
	6.0	50.43	39.59	4855.87	2763.43	9.81	7.40	373.53	307.05	5619.50	501.05	0.849
	7.0	58.38	45.83	5561.50	3159.50	9.76	7.36	427.81	351.06	6490.62	573.71	0.844
300 x 150	4.0	34.95	27.43	4196.67	1147.46	10.96	6.44	279.78	192.99	3435.43	331.89	0.879
	5.0	43.36	34.03	5153.13	1770.87	10.90	6.39	343.54	236.12	4244.57	406.58	0.874
	6.0	51.63	40.53	6073.51	2079.57	10.85	6.35	404.90	277.28	5034.64	478.20	0.869
	7.0	59.78	46.93	6958.28	2373.87	10.79	6.30	463.89	316.52	5806.00	546.85	0.864
	8.0	67.79	53.22	7807.95	2654.12	10.73	6.26	520.53	353.88	6559.05	612.64	0.859
	9.0	75.67	59.40	8623.00	2920.63	10.67	6.21	574.87	389.42	7294.15	675.66	0.854
	10.0	83.42	65.49	9403.90	3173.71	10.62	6.17	626.93	423.16	8011.67	736.01	0.848
300 x 200*	4.0	38.95	30.57	5072.88	2736.56	11.41	8.38	338.19	273.66	5555.71	448.64	0.979
	5.0	48.36	37.96	6241.05	3360.92	11.36	8.34	416.07	336.09	6882.77	551.49	0.974
	6.0	57.63	45.24	7370.23	3962.19	11.31	8.29	491.35	396.22	8186.02	650.85	0.969
	7.0	66.78	52.42	8460.93	4540.76	11.26	8.25	564.06	454.08	9465.89	746.83	0.964
	8.0	75.79	59.50	9513.66	5097.04	11.20	8.20	634.24	509.70	10722.83	839.51	0.959
	9.0	84.67	66.47	10528.93	5631.42	11.15	8.16	701.93	563.14	11975.29	929.01	0.954
	10.0	93.42	73.34	11507.24	6144.30	11.10	8.11	767.15	614.43	13169.70	1015.43	0.948

Note: These sizes would be included in our regular range of production in the near future. Sizes and Thickness other than listed above can be supplied on order to order basis.

*** This specification conforms to CE Mark conferred by Det Norske Veritas, Netherlands.**

General technical specifications and tolerances:

Spec	:	IS : 4923 : 1997/EN 10219-1 : 2006/ASTM A-500
Length	:	6.0m ± 0.05mm Customized Length ranging from 4 m to 8 m may be supplied
Thickness	:	For all sizes: ± 10.0%
Outer Dimensions	:	1% with a minimum of 0.5 mm
Corner Squareness	:	90° ± 2°
Corner Radii	:	Maximum, 3x (thickness of the section)
Weight	:	On individual length: +10%, -8%. On lots of MT: ± 7.5%
Straightness	:	Minimum 1:200th of any length measured along the center line (mill straightened condition) unless otherwise specifically arranged
Twist Tolerance	:	Maximum 2 mm:1:0.5 mm 1 m length, the measured relative vertical shift of any adjacent corner of the section, measured by keeping one side on flat surface.
End Finish	:	Plain Ended - Mechanically sheared, mill-cut finish without further machining.
Surface Finish	:	Black without any surface treatment of oiling or varnishing.
Raw Material	:	Sulphur content: 0.05% max, Phosphorus content: 0.05% max, Equivalent Carbon percentage well within specified weldability limit with matching physical properties
Weldability	:	RHS/SHS are weldable with standard M.S. Electrode without any preheating.
Packing	:	Bundled by sealing metal strap and each Bundle is labeled for size, measurement, Lot on, etc. Approximate weight of each Bundle is 1 mton (±350 kg).
Identification	:	Marking of APL APOLLO emblem is surface punched/stencilled/sticker pasted on all RHS/SHS. Standard BIS mark is also put on most of the sections
Note	:	RHS/SHS in customized

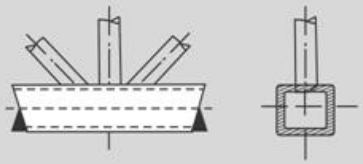


MAJOR APPLICATION AREAS

• Agricultural Implement Frames • Amusement Park and Playground Equipments • Automobile Chassis • Bridges • Bus Stands • Cranes • Drilling Rigs • Exhibition Stalls • Furniture, Partition Frames • Flood Light Masts • Guard Rails, Staircases • Industrial Lifting Equipment• Industrial Sheds • Large Span Portal Frames • Material Storage Racks • Mine Roof Support System (cogs, props) • Pallets • Pedestrian Walkovers (Footbridge) • Sign Supporting Structure • Space Frames • Sports Galleries • Transmission Line Towers • Trolleys • Truck and Bus Body Members and lots of other

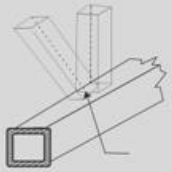
GAP JOINTS

This arrangement is often the simplest and most economical and the joints are sufficiently strong. Joining member alignments should be at >30° with respect to the other.



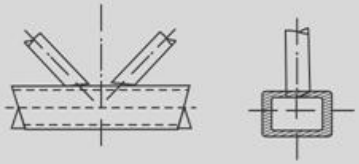
OVERLAP JOINTS

The weld seam 'A' can be omitted without affecting the behaviour of the joint.



POSSIBLE REINFORCEMENTS

In certain cases, reinforced joints are preferred for improved joint rigidity.



CUTTING

- RHS/SHS can be cut by means of a heavy duty circular/hand saw or by flame cutting either manual or automatic.
- The path of cut can be marked directly on the surface of RHS/SHS or on a template after shop layout.
- For section thickness of 5 mm and above, edges may be chamfered for proper welding penetration.

BENDING

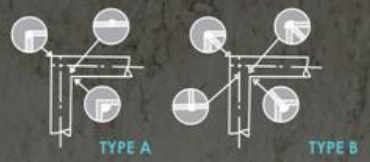
- Axial cold bending of RHS/SHS is possible by using an internal mandrel and the roller must be adapted to the shape and size of the section.
- Three roll bending machine may be adopted – bend by slow multiple pass through trial and error method.
- Thicker or larger sections are recommended to be preheated in a normalizing furnace before bending in hot conditions for better formation.

WELDED KNEE JOINTS

This is simple inexpensive and quite satisfactory if the connections are not heavily loaded (Type A)

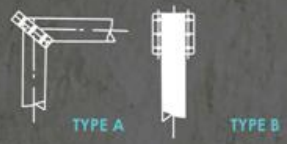
When the section differ in sizes or for additional strength, stiffening plate may be used (Type B)

Thickness of stiffening plate >2 x thickness of RHS/RHS or > 6mm, whichever is maximum.



BOLTED KNEE JOINTS

These are simple and economical arrangements offering good strength and rigidity.



COLUMN BASES

When perfect pin end is not required Type A may be followed and column base with small moment can be made as shown (Type B)

WELDING

Technique in principle is similar for that of conventional sections. Follow relevant BIS code or practice and design conditions.

Butt welds: The throat thickness of the seam a) Wall thickness of the section when joining members are of equal thickness, b) Wall thickness of thinner section, if thickness are different. Backing strip may be provided to ensure total root penetration in case of thicker section design size.

Fillet welds: Various types may be provided. Size of the fillet is guided by the throat thickness as explained above.

Note: All free ends of RHS/SHS should be sealed properly by welding to prevent internal corrosion.

Sequence: Edges are to be tack welded to maintain uniform gap during welding to minimize residual stress: Transverse weld before longitudinal one, Fillet weld following Butt weld, starting from inside to outwards.

Sudesh Group

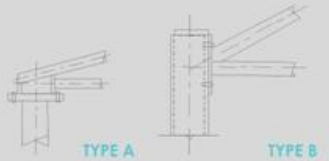
HINGED COLUMN BASES

When design assumptions specify an effective hinge in particular plane, this must be implemented by means of an axle or other device imparting rotational freedom as shown (Type A & Type B)

For large axial loads, the column base should be stiffened as shown (Type C) to minimize the thickness of base plate. Stiffener plate at the middle of the RHS/SHS sides better be avoided.

TRUSS TO COLUMN CONNECTIONS

Truss either can rest upon the column as shown (Type A) or can be bolted at the face of the column as shown (Type B). In the former case, the discrepancy in fabrication can be accommodated by providing slotted holes while in the latter, the same can be adjusted by packing plate.



CORRECTING DISTORTIONS

Post weld distortions despite precautions can be corrected by cold bending, hammering of the welds or by applying controlled local compensating heating on opposite sides. It is imperative to avoid excessive thermo-mechanical operation.

BOLTED/RIVETED CONNECTIONS:

A) Fasteners should conform to relevant BIS specification and arrangement should be adequate to withstand combination of design loads at joints and to facilitate ease of fixing.

B) As internal surfaces of RHS/SHS are inaccessible adapt:

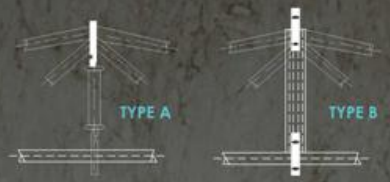
- Special structural fittings for indirect external bolting
- Blind bolts
- Self threading bolts etc.

ERECTION:

- In principle similar techniques are adopted as those for conventional section assemblies.
- For hoisting and handling no additional stiffeners are required due to high torsional rigidity of RHS/SHS.

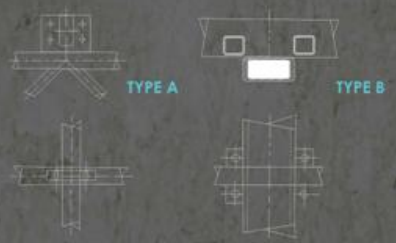
BOLTED RIDGE DETAILS & TIE CONNECTIONS

Bolted connections as shown (Type A & Type B) are adopted by using single or double sag ties respectively.



PURLIN CONNECTIONS

Purlin becomes very efficient with RHS because of its rigidity to avoid intermediate sag rods. The connection shown (Type A & B) can provide end fixity. Any other type of detailing may be adopted suitably keeping in view that the ends of the purlin sections should be sealed to avoid internal corrosion.



TYPICAL SPLICING DETAILS

The internal backing sleeve fulfills two functions, it facilitates the proper alignment of the parts and act as backing strip for butt weld.

API
LINE PIPES & CASING / TUBINGS

API TUBES

This category of steel tubes is generally made out of MS material.

The purpose of this specification is to provide standards for pipe suitable for use in conveying gas, water, and oil in both the oil and natural gas industries. This specification covers welded steel line pipe. It includes plain-end, threaded-end, and belled-end pipe, as well as through-the-flow line (TFL) pipe and pipe with ends prepared for use with special couplings. Although the plain-end line pipe meeting this specification is primarily intended for field makeup by circumferential welding, the manufacturer will not assume responsibility for field welding.

5L

This International Standards specifies requirement for the manufacturing of two product specification levels (PSL 1 and PSL 2) of seamless and welded steel pipes **for use in pipeline transportation systems in the petroleum and natural gas industries.**

This International Standard is not applicable to cast pipe.

5CT

This International Standard specifies the technical delivery conditions for steel pipes (casing, tubing, plain –end casing liners and pup joints), coupling stock and accessories and establish requirement for two Product Specification Levels (PSL - 1 & PSL – 2). **These steel pipes are use as casing or tubing for well in the petroleum and natural gas industries.**

Sudesh Group

STEEL LINE PIPE CONFORMING TO API 5L

NB	OD	Wall Thickness	Schedule No.	Plain End Weight		STD Test Pressure				
(Inch)	(mm)	(mm)		Kg/m	Lb/ft	Grade A	Grade B	Grade X 42	Grade X 46	Grade X 52
4	101.6	4.0	–	9.63	6.41	114	137	150	171	194
4	101.6	4.4	–	10.55	–	123	143	172	188	207
4	101.6	4.8	–	11.46	7.66	134	156	188	205	207
4	101.6	5.7	STD 40	13.48	9.12	154	172	207	207	207
4	101.6	6.4	–	15.02	10.02	154	172	207	207	207
4 1/2	114.3	4.0	–	10.88	7.24	87	101	122	133	151
4 1/2	114.3	4.4	–	11.92	–	96	111	134	146	166
4 1/2	114.3	4.8	–	12.96	8.67	104	121	146	160	181
4 1/2	114.3	5.2	–	13.99	–	113	132	158	173	196
4 1/2	114.3	5.6	–	15.01	10.02	122	142	170	186	207
4 1/2	114.3	6.0	STD 40	16.02	10.8	130	152	183	200	207
4 1/2	114.3	6.4	–	17.03	11.36	139	162	195	207	207
5 9/16	141.3	4.0	–	13.54	9.02	70	82	97	107	121
5 9/16	141.3	4.8	–	16.16	10.8	84	98	117	129	145
5 9/16	141.3	5.6	–	18.74	12.51	98	115	137	150	170
5 9/16	141.3	6.6	–	21.92	14.63	116	135	161	177	199
6 5/8	168.3	4.0	–	16.21	–	59	68	102	112	127
6 5/8	168.3	4.4	–	17.78	–	64	75	113	123	140
6 5/8	168.3	4.8	–	19.35	12.94	70	82	123	135	152
6 5/8	168.3	5.2	–	20.91	–	76	89	133	145	165
6 5/8	168.3	5.6	–	22.47	15.00	82	96	143	157	178
6 5/8	168.3	6.4	–	25.55	17.04	94	109	164	179	203
6 5/8	168.3	7.1	STD 40	28.22	18.99	105	123	183	201	207
8 5/8	219.1	4.8	–	25.37	16.96	54	63	94	103	117
8 5/8	219.1	5.2	–	27.43	18.28	54	63	102	112	127
8 5/8	219.1	5.6	–	29.48	19.68	63	74	110	121	136
8 5/8	219.1	6.4	20	33.57	22.38	72	84	126	138	156
8 5/8	219.1	7.0	30	36.61	24.72	80	93	139	153	173
8 5/8	219.1	7.9	–	41.14	27.73	90	105	157	172	194
8 5/8	219.1	8.2	STD 40	42.65	28.58	92	108	162	178	200
8 5/8	219.1	8.7	–	45.14	30.45	99	116	173	189	207
10 3/4	273.1	5.2	–	34.35	22.89	43	58	93	102	115
10 3/4	273.1	5.6	–	36.94	24.65	50	59	100	110	124
10 3/4	273.1	6.4	20	42.09	28.06	58	68	114	125	142
10 3/4	273.1	7.1	–	46.57	31.23	64	75	127	140	158
10 3/4	273.1	7.8	30	51.03	34.27	71	83	141	154	174
10 3/4	273.1	8.7	–	56.72	38.27	79	92	157	172	195
10 3/4	273.1	9.3	STD 40	60.5	40.52	84	99	167	183	207
12 3/4	323.9	5.6	–	43.96	29.34	43	50	85	92	105
12 3/4	323.9	6.4	20	50.11	33.41	49	56	96	105	119
12 3/4	323.9	7.1	–	55.47	37.46	54	64	108	119	134
12 3/4	323.9	7.9	–	61.56	41.48	61	71	121	132	149
12 3/4	323.9	8.4	30	60.35	43.81	64	75	127	139	158
12 3/4	323.9	8.7	STD	67.62	45.62	67	78	133	145	165
12 3/4	323.9	9.5	10	73.65	49.61	73	85	145	158	179
14	355.6	6.4	–	55.11	36.75	44	52	88	96	109
14	355.6	7.1	–	61.02	41.21	50	58	99	108	122

API 5 CT PLAIN END CASING PIPES FOR PSL - 1 ONLY

Sl. No.	OUTSIDE DIA	WALL THICKNESS	WALL THICKNESS	API GRADE	STD. TEST PRESSURE	STD. TEST PRESSURE	ALT. TEST PRESSURE
	(mm)	(ppf)	(mm)		PSI	Kg/Cm^2	$PSI/Kg/Cm^2$
1	4.50" (114.30mm)	9.50	5.21	H-40 J-55/K-55	2900 4000	200 - 280	N/A
2		10.50	5.69	J-55/K-55	4400	305	N/A
3		11.60	6.35	J-55/K-55	4900	340	N/A
1	5 1/2" (139.70mm)	14.00	6.2	H-40 J-55/K-55	2800 3900	195 - 270	N/A
2		15.50	6.98	J-55/K-55	4400	305	N/A
1	6 5/8" (168.30mm)	20	7.32	J-55/K-55	2800 3800	195 - 265	N/A
1	8 5/8" (219.10mm)	24	6.71	J-55/K-55	2700	190	N/A
2		28	7.72	H-40	2300	160	N/A
3		32	8.94	H-40 J-55/K-55	2600	180	N/A
1	10 3/4" (273.10mm)	32.75	7.09	H-40	1200	82	1700 120
2		40.50	8.89	H-40	1600	110	2100/145
3				J-55/K-55	2100	145	2900/200

CORPORATE CONTACT INFO:

Manufacturing Plants

APL APOLLO TUBES LTD., UNIT –I
A - 19, Industrial Area, Sikandrabad,
Distt. Bulandshahar - 203205.
Uttar Pradesh, India.
Ph : 05735 - 222504, 223157
Fax : 05735 - 223221
E-mail : info@aplapollo.com

APL APOLLO TUBES LTD., UNIT – II
332-338, Alur Village, Perandapalli,
Hosur - 635109, Tamil Nadu, India.
Ph : 0091 - 4344-260550
Fax : 04344 - 260550
E-mail : hosur@aplapollo.com

APOLLO METALEX PVT. LTD.
A – 2, Industrial Area, Sikandrabad,
Bulandshahar - 203205,
Uttar Pradesh, India
Ph : 05735 - 223360
Fax : 05735 - 222647
E-mail : info@apollometalex.com

SHRI LAKSHMI METAL UDYOG LTD.
No. 9 - 11, KIADB Industrial Area,
Attibele, Bengaluru - 562107
Karnataka, India
Ph : 080 - 27820018
Fax : 080 - 27820068
E-mail : slmul@aplapollo.com

LLOYDS LINE PIPES LTD.
Plot No. M-1, Additional MIDC,
Kudavali Village, Murbad,
Thane - 421401,
Maharashtra, India
Ph : 02524 - 222003, 222041
Fax : 02524 - 222002.
E-mail : info@lloydspipe.com

Branches

Uttar Pradesh
APL Apollo Tubes Limited
103, Prakash Industrial Estate,
U.P. Boarder,
Ghaziabad - 201010, India
Mb : +91 9818352027,
Ph : 0120 - 4542270
E-mail : sharadjain@aplapollo.com

Haryana
Khasara No. 12-13, Sahpur Road,
Ballabhgarh, Faridabad - 121004, India
Mb : +91 9999884115
E-mail : gurgaon@aplapollo.com

Punjab
Plot No. 39, Main Road, Phase - V,
Focal Point, Ludhiana - 141010, India
Mb : +91 9888604621
Phone : 0161 - 5025048
E-mail : ludhiana@aplapollo.com

Rajasthan
Sikar Road, Rajawas, Near Bus Stand,
Jaipur - 303704, India
Mb : +91 9314626672
Ph : 0141- 3015503
E-mail : jaipur@aplapollo.com

Maharashtra
S.No. 312/1/11, Opp. Indian Oil Petrol,
Handewadi Road, Village Devachi & Uruli,
Pune - 412308, India
Mb : +91 9561081671, 9370179902,
Ph : 020-64019652
E-mail : pune@aplapollo.com

Andhra Pradesh
SY No. 154, Doolapally,
Qutubullapur Mandal,
Rangareddy, Hyderabad - 500014, India
Mb : +91 7893500618
E-mail : hyderabad@aplapollo.com

Karnataka
No. 77 Re Sy. No. 77/1, Sy No. 76,
Hommadevanahalli Village,
Begur Hobli, Bengaluru South
Bengaluru - 560083, India
Mb : +91 9008491350
E-mail : amitkapoor@aplapollo.com

APL APOLLO TUBES LIMITED

Corporate Office :
36, Kaushambi, Near Anand Vihar Terminal, Ghaziabad – 201010, Uttar Pradesh, India
Ph : 0120 – 4041400, 401, Fax : 0120-4041444, W : www.aplapollo.com , E-mail : info@aplapollo.com
Registered Office :
37, Hargobind Enclave, Vikas Marg, Delhi – 110092, India
Ph : 011-22373437, Fax : 011-22373537

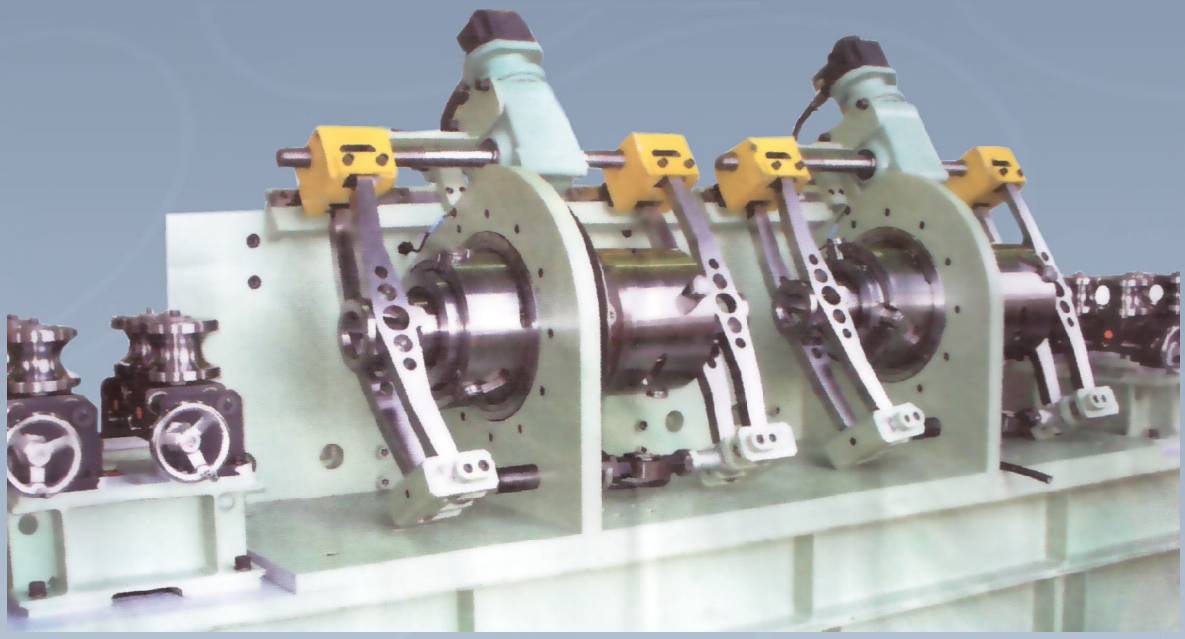
Designed & Printed By : Ornate Print House, +91 9312293465

APLAPOLLO®
Tubes for every reason

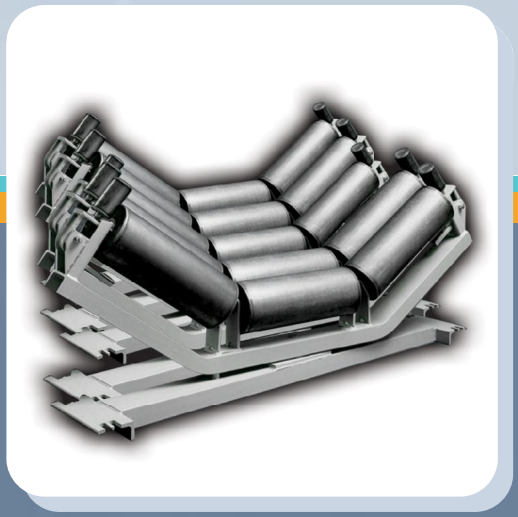
Sudesh Group

APL APOLLO TUBES LTD.

Dynamically Balanced & Cold Drawn Precision In Tubes. Through Online Rotary Sizing Japanese Technology



First ever, Rotary Sizing Mill (RSM) Supplied by ***KUSAKABE ELECTRIC & MACHINERY COMPANY LIMITED, JAPAN*** *has been commissioned at APL Apollo Tubes Limited at their plant at Hosur, Tamilnadu. This equipment, first of its kind in India, is capable of achieving accuracy & precision as high as required for Dynamically balanced tubes & Surface finish as good as achieved by cold drawn process for most demanding customers.*



Idler Tubes

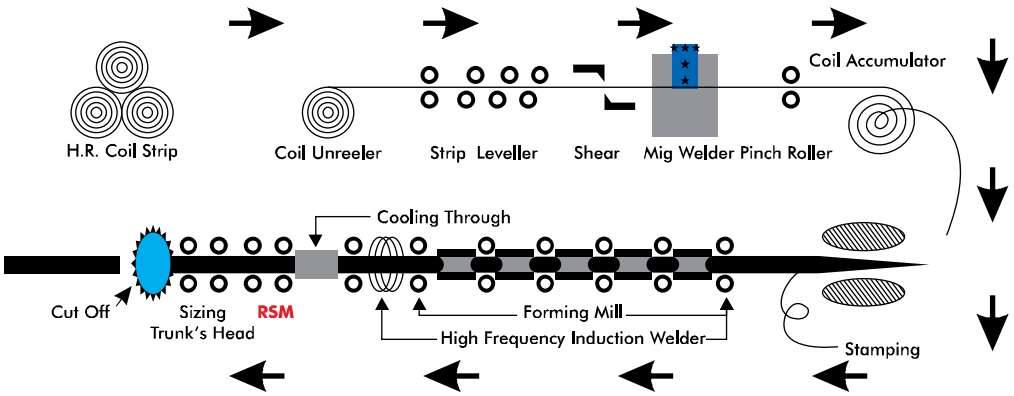
Propeller Shafts Tubes

Apl Apollo Tubes Limited was envisioned & promoted by founder chairman **Mr. Sudesh Kumar Gupta** in 1986 & form their onward under the leadership of **Mr. Sanjay Gupta** present chairman has grown from an indigenous single unit plant at Sikandrabad, U.P. to present multi location & multi product conglomerate. APL's international standard technology & its team of talented professionals make it a premier player in tubes industry.

Apl Apollo Tubes Limited is now globally recognised producer of 500,000 MT of Black, Hot Dipped Galvanized and Pre Galvanized, Round/Rectangular/Hollow Section Tubes & focuses on offering cost - effective product range & total solutions.

Apl Apollo Tubes Limited has initiated strategic growth plans in both domestic & international markets & has made investments towards capacity expansions through backward & forward integration, Apl Apollo Tubes Limited has followed the way of innovation.

Flow Chart with RSM



General Product Range

Size in OD ↓	NB	Thick in mm NB →	1.20	1.40	1.60	2.00	2.50	3.00	3.60	4.00	4.50	5.00	5.40	6.00	7.00	8.00
21.40	15 MM	½"														
25.40																
26.75	20 MM	3/4"														
31.75																
33.40	25 MM	1"														
38.10																
42.20	32 MM	1 1/4"														
48.03	40 MM	1 1/2"														
50.80																
57.00																
60.30	50 MM	2"														
63.50																
76.10	65 MM	2 1/2"														
88.90	80 MM	3"														
95.40																
101.60																
114.30	100 MM	4"														
120.00																
127.00																
133.00																
139.70	125 MM	5"														
152.40																
159.00																
163.00	150 MM	6"														
168.00																
173.00																

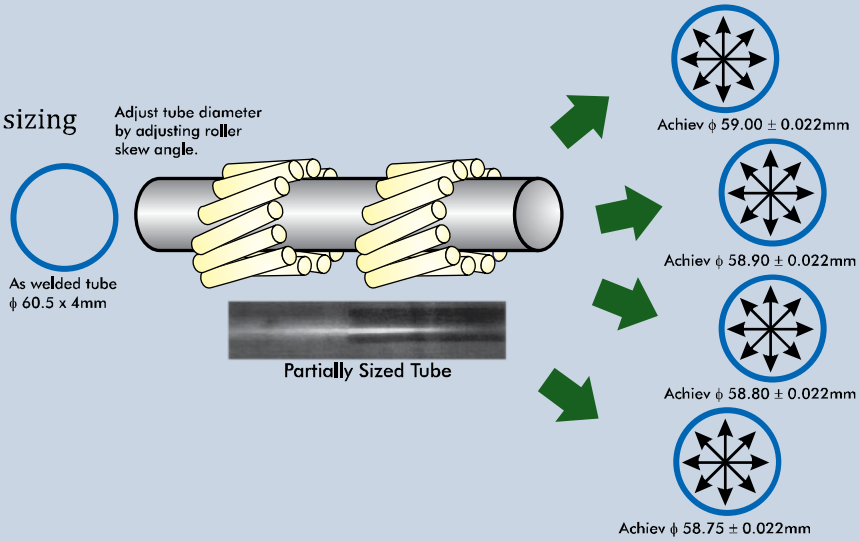
Advantages Of RSM Technology

In between Non-Standard Diameter possible online

In between Non-Standard Diameter can be produced by online adjustment without change of toolings. Diameter accuracy and roundness achieved with Rotary Sizing technology is of very high standard compared to conventional sizing mills.

Surface Finish Improves

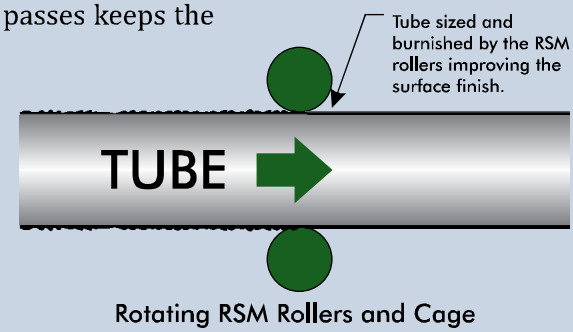
Roll Marks caused by conventional sizing method are completly eliminated and the surface finish improves by burnish effect of Rotary Sizing operation and due to non-existence of large speed differential between tubes and sizing tooling as in convential mills, Ra, Ry & Rz can be reduced by as much as 30%.



Even And Low Residual Stress

Typically two cages are used in RSM which are counter rotating. This is required to eliminate any torsion load which may be induced into the tube by the process. This results in even reduction on full surface of tube Sizing the tube in only 2 passes keeps the residual stress low thereby preserving more of the materials allongation post tube mill manipulation.

The tubes processed through RSM, there is no significant change in residual stress in the traverse direction. In the longitudinal direction there is a large reduction in the surface residual tensile stress.



End Uses

- Idler Tubes for Conveyors.
- Propeller Shaft Tubes.
- Bobbin Tubes for Textile Industry.
- High End Application where High Precision Diameter is Required.
- High Rotational Application.

General Technical Specification And Tolerance IS : 9295

Type of Tubes	Grade	Mechanical Properties			Dimensional Tolerance			Weight		
		YST MPa	UTS MPa	0% of Elogation	Outer Diameter	Thickness	Ovality	Eccentricity	Individual Length	Lot of 10 MT
ERW	210	210	330	20	+/- 0.8%	+/- 10%	<168.3OD 0.5 MM> 168.3 OD 1.0 MM	Not more than 5%	+/- 10%	+/- 7.5%
	240	240	410	18						
	310	310	450	15						

Chemical Properties % of S=0.05% Max.
% of P=0.05% Max.

Straightness : Not more than 1/1000 of any length, when measure at the centre of that length.

Height of the Internal weld Fin : shell be limited to 1.7mm.

APL APOLLO IDLER TUBES AS PER IS:9295 DIMENSION & MASS

Outside Diameter MM	Thickness MM	Mass Kg/M
63.5	3.65	5.39
	4.50	6.55
76.10	3.65	6.52
	4.50	7.95
88.90	4.05	8.47
	4.85	10.05
	6.30	12.83
101.60	4.05	9.74
	4.85	11.57
	6.30	14.81
108.00	4.05	10.38
	4.85	12.34
	6.30	15.80
114.30	4.50	12.19
	5.40	14.50
	6.30	16.78
120.00	4.50	12.82
	5.40	15.26
	6.30	17.67
127.00	4.50	13.60
	4.85	14.61
	5.40	16.19
	6.30	18.75
133.00	4.50	14.30
	4.85	15.33
	5.40	16.99
	6.30	19.69
139.70	4.50	15.00
	4.85	16.13
	5.40	17.89
	6.30	20.73
152.40	4.50	16.40
	4.85	17.65
	5.40	19.58
	6.30	22.70
159.00	4.50	17.10
	4.85	18.44
	5.40	20.46
	6.30	23.72
165.10	4.50	17.80
	4.85	19.17
	5.40	21.27
	6.30	24.67
168.30	4.50	18.20
	4.85	19.55
	5.40	21.69
	6.30	25.17

APL APOLLO TUBES LIMITED

Corporate Office :

35-36, Behind Wave Cinema, Kaushambi
Ghaziabad - 201010, U.P., India
Ph : +91-120-4041400, Fax : +91-120-4041444
www.aplapollo.com, E-mail : info@aplapollo.com