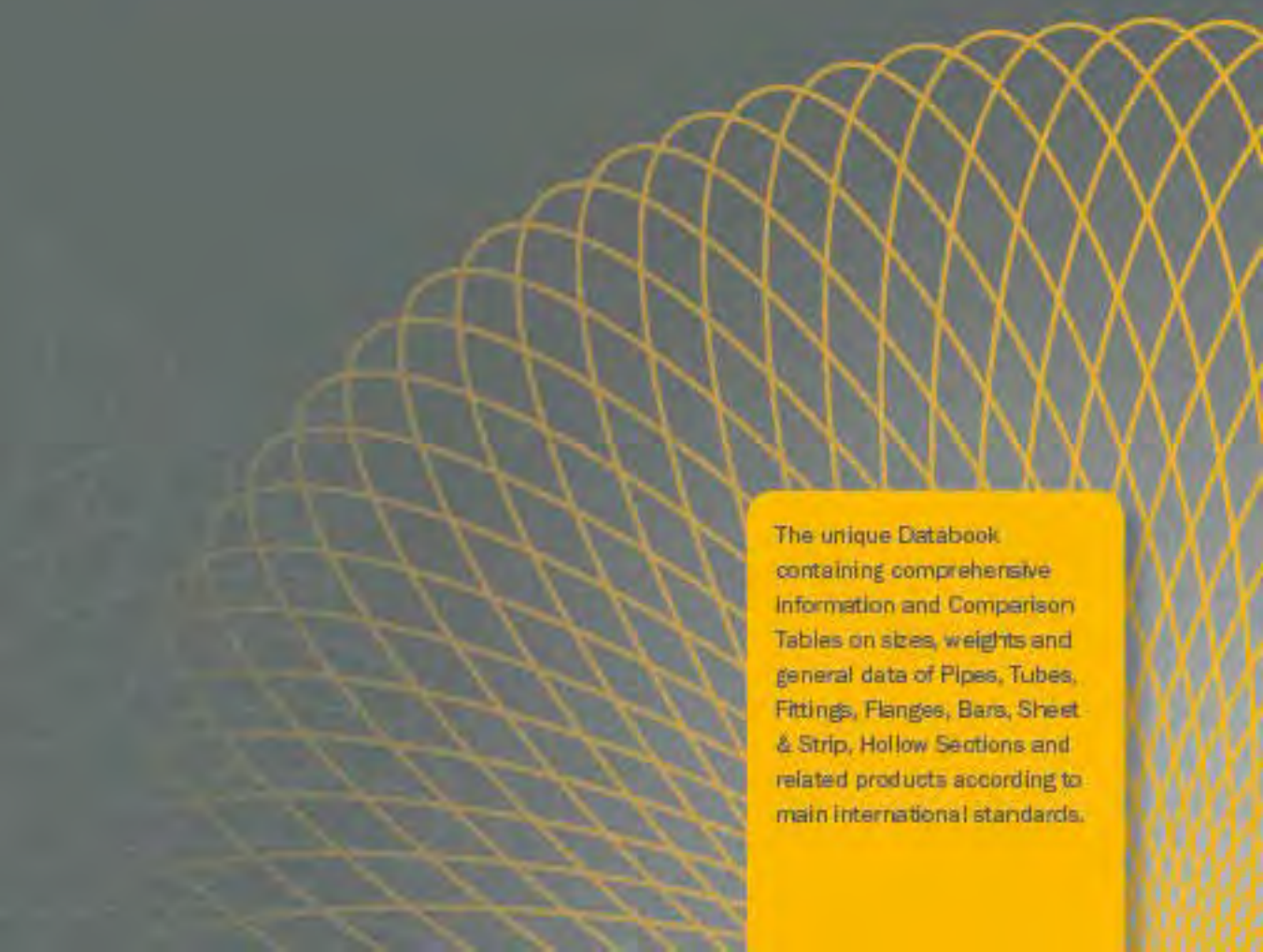
TPS TECHNITUBE®
RÖHRENWERKE GMBH

Tube & Pipe Sizes

7th edition



The unique Databook containing comprehensive information and Comparison Tables on sizes, weights and general data of Pipes, Tubes, Fittings, Flanges, Bars, Sheet & Strip, Hollow Sections and related products according to main international standards.

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TPS TECHNITUBE® RÖHRENWERKE GMBH

TPS – Your competent manufacturer for tubular & piping products and accessories

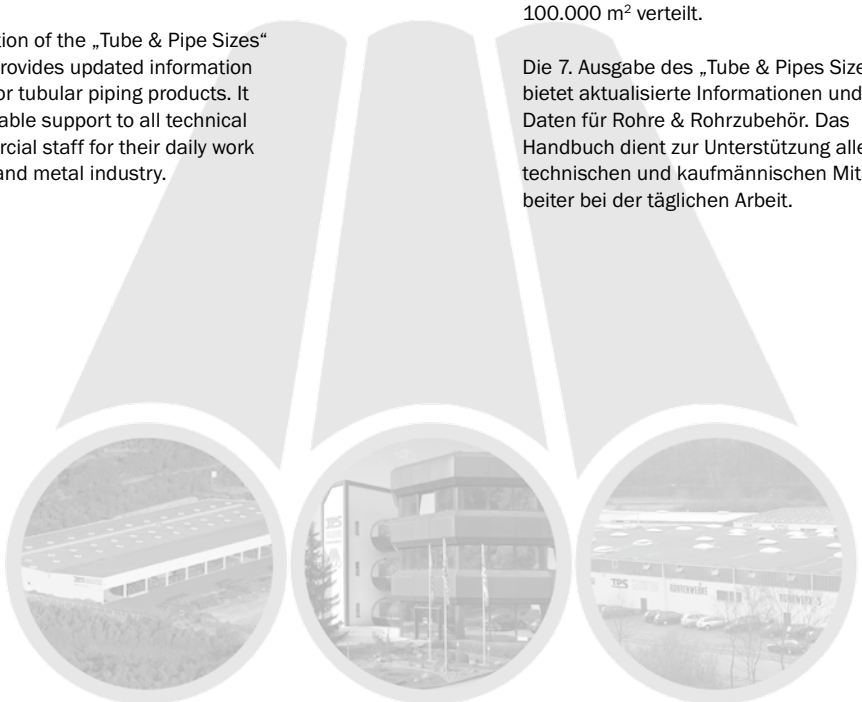
TPS-Technitube Röhrenwerke GmbH is worldwide known as a reliable manufacturer and stockist of pipes, tubes, fittings, flanges and valves in various alloys and sizes. The production and stock facilities of TPS are located on an area of 1.100.000 sq.ft in Daun/Germany.

The 7th edition of the „Tube & Pipe Sizes“ handbook provides updated information and datas for tubular piping products. It gives a valuable support to all technical and commercial staff for their daily work in the pipe and metal industry.

TPS – Ihr kompetenter Hersteller von Rohren & Rohrzubehör

TPS-Technitube Röhrenwerke GmbH genießt weltweit den Ruf eines zuverlässigen, kompetenten Herstellers und Lagerhalters von Rohren und Rohrzubehör von höchster Qualität.
Produktion und Lager sind in Daun/Eifel auf einer Gesamtindustriefläche von über 100.000 m^2 verteilt.

Die 7. Ausgabe des „Tube & Pipes Sizes“ bietet aktualisierte Informationen und Daten für Rohre & Rohrzubehör. Das Handbuch dient zur Unterstützung aller technischen und kaufmännischen Mitarbeiter bei der täglichen Arbeit.



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according to ANSI-B 36.10 supplemented with all new dimensions of API Standards 5L, 5LS and 5LX

Size	Outside Diameter		Wall Thickness		Weight		Identification		
in.	in.	mm	in.	mm	lb/ft	kg/m	API	STD XS; XXS	Schedule No
1/8	0,405	10,30	0,068 0,095	1,7 2,4	0,24 0,31	0,357 0,461	5L 5L	STD XS	40 80
1/4	0,540	13,70	0,088 0,119	2,2 3,0	0,42 0,54	0,625 0,804	5L 5L	STD XS	40 80
3/8	0,675	17,10	0,091 0,126	2,3 3,2	0,57 0,74	0,848 1,10	5L 5L	STD XS	40 80
1/2	0,840	21,30	0,109 0,147 0,188 0,294	2,8 3,7 4,8 7,5	0,85 1,09 1,31 1,71	1,26 1,62 1,95 2,54	5L 5L 5L 5L	STD XS XXS	40 80 160
3/4	1,050	26,70	0,113 0,154 0,219 0,308	2,9 3,9 5,6 7,8	1,13 1,47 1,94 2,44	1,68 2,19 2,88 3,63	5L 5L 5L 5L	STD XS XXS	40 80 160
1	1,315	33,40	0,133 0,179 0,250 0,358	3,4 4,5 6,4 9,1	1,68 2,17 2,84 3,66	2,50 3,23 4,23 5,45	5L 5L 5L 5L	STD XS XXS	40 80 160
1 1/4	1,660	42,20	0,140 0,191 0,250 0,382	3,6 4,9 6,4 9,7	2,27 3,00 3,76 5,21	3,38 4,46 5,60 7,75	5L 5L 5L 5L	STD XS XXS	40 80 160
1 1/2	1,900	48,30	0,145 0,200 0,281 0,400	3,7 5,1 7,1 10,2	2,72 3,63 4,86 6,41	4,05 5,40 7,23 9,54	5L 5L 5L 5L	STD XS XXS	40 80 160
2	2,375	60,30	0,083 0,109 0,126 0,141 0,154 0,172 0,188 0,218 0,250 0,281 0,344 0,436	2,1 2,8 3,2 3,6 3,9 4,4 4,8 5,5 6,4 7,1 8,7 11,1	2,03 2,64 3,00 3,36 3,65 4,05 4,39 5,02 5,67 6,28 7,46 9,03	3,02 3,93 4,47 5,00 5,44 6,03 6,54 7,48 8,45 9,35 11,1 13,4	5L, 5LX 5L, 5LX 5L, 5LX 5L, 5LX 5L, 5LX 5L, 5LX 5L, 5LX 5L, 5LX 5L, 5LX 5L, 5LX 5L, 5LX	 STD XS XXS	 40 80 160

Size	Outside Diameter		Wall Thickness		Weight		Identification		
in.	in.	mm	in.	mm	lb/ft	kg/m	API	STD XS; XXS	Schedule No
2 1/2	2,875	73,00	0,083	2,1	2,47	3,68	5L, 5LX		
			0,109	2,8	3,22	4,80	5L, 5LX		
			0,125	3,2	3,67	5,46	5L, 5LX		
			0,141	3,6	4,12	6,12	5L, 5LX		
			0,156	4,0	4,53	6,75	5L, 5LX		
			0,172	4,4	4,97	7,40	5L, 5LX		
			0,188	4,8	5,40	8,04	5L, 5LX		
			0,203	5,2	5,79	8,62	5L, 5LX	STD	
			0,216	5,5	6,13	9,13	5L, 5LX		
			0,250	6,4	7,01	10,40	5L, 5LX		
			0,276	7,0	7,66	11,40	5L, 5LX	XS	80
			0,375	9,5	10,00	14,90			160
			0,552	14,0	13,70	20,40	5L, 5LX	XXS	
3	3,500	88,90	0,083	2,1	3,03	4,51	5L, 5LX		
			0,109	2,8	3,95	5,88	5L, 5LX		
			0,125	3,2	4,57	6,72	5L, 5LX		
			0,141	3,6	5,06	7,54	5L, 5LX		
			0,156	4,0	5,57	8,30	5L, 5LX		
			0,172	4,4	6,11	9,10	5L, 5LX		
			0,188	4,8	6,65	9,91	5L, 5LX		
			0,216	5,5	7,58	11,3	5L, 5LX	STD	40
			0,250	6,4	8,68	12,9	5L, 5LX		
			0,281	7,1	9,66	14,4	5L, 5LX		
			0,300	7,6	10,30	15,3	5L, 5LX	XS	80
			0,438	11,1	14,30	21,3			160
			0,600	15,2	18,60	27,7	5L, 5LX	XXS	
3 1/2	4	101,60	0,083	2,1	3,47	5,17	5L, 5LX		
			0,109	2,8	4,53	6,75	5L, 5LX		
			0,125	3,2	5,17	7,70	5L, 5LX		
			0,141	3,6	5,81	8,65	5L, 5LX		
			0,156	4,0	6,40	9,53	5L, 5LX		
			0,172	4,4	7,03	10,5	5L, 5LX		
			0,188	4,8	7,65	11,4	5L, 5LX		
			0,226	5,7	9,11	13,6	5L, 5LX	STD	40
			0,250	6,4	10,00	14,9	5L, 5LX		
			0,281	7,1	11,20	16,6	5L, 5LX		
			0,318	8,1	12,50	18,6	5L, 5LX	XS	80
4	4,5	114,30	0,083	2,1	3,92	5,84	5L, 5LS, 5LX		
			0,109	2,8	5,11	7,61	5L, 5LS		
			0,125	3,2	5,84	8,70	5L, 5LS, 5LX		
			0,141	3,6	6,56	9,77	5L, 5LS, 5LX		
			0,156	4,0	7,24	10,8	5L, 5LS, 5LX		
			0,172	4,4	7,95	11,8	5L, 5LS, 5LX		
			0,188	4,8	8,66	12,9	5L, 5LS, 5LX		
			0,203	5,2	9,32	13,9	5L, 5LS, 5LX		
			0,219	5,6	10,00	14,9	5L, 5LS, 5LX		
			0,237	6,0	10,80	16,1	5L, 5LS, 5LX	STD	40
			0,250	6,4	11,40	16,9	5L, 5LS, 5LX		
			0,281	7,1	12,70	18,9	5L, 5LS, 5LX		
			0,312	7,9	14,00	20,8	5L, 5LS, 5LX		
			0,337	8,6	15,00	22,3	5L, 5LS, 5LX	XS	80
			0,438	11,1	19,00	28,3	5L, 5LS, 5LX		120
			0,531	13,5	22,50	33,5	5L, 5LS, 5LX		160
			0,674	17,1	27,50	41,0	5L, 5LS, 5LX	XXS	

Size	Outside Diameter		Wall Thickness		Weight		Identification		
in.	in.	mm	in.	mm	lb/ft	kg/m	API	STD XS; XXS	Schedule No
5	5,563	141,30	0,083	2,1	4,86	7,24	5L, 5LS		
			0,125	3,2	7,26	10,8	5L, 5LS		
			0,156	4,0	9,01	13,4	5L, 5LS		
			0,188	4,8	10,80	16,1	5L, 5LS		
			0,219	5,6	12,50	18,6	5L, 5LS		
			0,258	6,6	14,60	21,8	5L, 5LS	STD	40
			0,281	7,1	15,80	23,6	5L, 5LS		
			0,312	7,9	17,50	26,1	5L, 5LS		
			0,344	8,7	19,20	28,6	5L, 5LS		
			0,375	9,5	20,80	31,0	5L	XS	80
			0,500	12,7	27,00	40,3	5L, 5LS		120
			0,625	15,9	33,00	49,1	5L, 5LS		160
			0,750	19,0	38,60	57,4	5L	XXS	
6	6,625	168,30	0,083	2,1	5,80	8,64	5L, 5LS, 5LX		
			0,109	2,8	7,59	11,3	5L, 5LS, 5LX		
			0,125	3,2	8,68	12,0	5L, 5LS, 5LX		
			0,141	3,6	9,76	14,5	5L, 5LS, 5LX		
			0,156	4,0	10,80	16,1	5L, 5LS, 5LX		
			0,172	4,4	11,80	17,6	5L, 5LS, 5LX		
			0,188	4,8	12,90	19,2	5L, 5LS, 5LX		
			0,203	5,2	13,90	20,7	5L, 5LS, 5LX		
			0,219	5,6	15,00	22,3	5L, 5LS, 5LX		
			0,250	6,4	17,0	25,4	5L, 5LS, 5LX		
			0,280	7,1	19,0	28,3	5L, 5LS, 5LX	STD	40
			0,312	7,9	21,0	31,3	5L, 5LS, 5LX		
			0,344	8,7	23,1	34,4	5L, 5LS, 5LX		
			0,375	9,5	25,0	37,3	5L, 5LS, 5LX		
			0,432	11,0	28,6	42,6	5L, 5LS, 5LX	XS	80
			0,500	12,7	32,7	48,7	5L, 5LS, 5LX		
			0,562	14,3	36,4	54,2	5L, 5LS, 5LX		120
			0,625	15,9	40,0	59,6	5L, 5LS, 5LX		
			0,719	18,3	45,4	67,6	5L, 5LS, 5LX		160
			0,864	21,9	53,2	79,2	5L	XXS	
8	8,625	219,10	0,125	3,2	11,4	19,9	5L, 5LS, 5LX		
			0,156	4,0	14,1	21,0	5L, 5LS, 5LX		
			0,188	4,8	16,9	25,2	5L, 5LS, 5LX		
			0,203	5,2	18,3	27,3	5LS, 5LX		
			0,219	5,6	19,7	29,3	5L, 5LS, 5LX		
			0,250	6,4	22,4	33,3	5L, 5LS, 5LX		20
			0,277	7,0	24,7	36,8	5L, 5LS, 5LX		30
			0,312	7,9	27,7	41,3	5L, 5LS, 5LX		
			0,322	8,2	28,6	42,5	5L, 5LS, 5LX	STD	40
			0,344	8,7	30,4	45,3	5L, 5LS, 5LX		
			0,375	9,5	33,0	49,2	5L, 5LS, 5LX		
			0,406	10,3	35,7	53,1			60
			0,438	11,1	38,3	57,0	5L, 5LS, 5LX		
			0,500	12,7	43,4	64,6	5L, 5LS, 5LX	XS	80
			0,562	14,3	48,4	72,1	5L, 5LS, 5LX		
			0,594	15,1	50,9	75,8			100
			0,625	15,9	53,4	79,5	5L, 5LS, 5LX		
			0,719	18,3	60,7	90,4	5L, 5LS, 5LX		120
			0,812	20,6	67,8	101,0			140
			0,875	22,6	72,4	108,0	5L, 5LS, 5LX	XXS	
			0,906	23,0	74,4	111,0			160

Size	Outside Diameter		Wall Thickness		Weight		Identification		
in.	in.	mm	in.	mm	lb/ft	kg/m	API	STD XS; XXS	Schedule No
10	10,750	2730	0,156	4,0	17,6	26,3	5L, 5LS, 5LX		
			0,188	4,8	21,2	31,6	5L, 5LS, 5LX		
			0,203	5,2	22,9	34,1	5L, 5LS, 5LX		
			0,219	5,6	24,6	36,7	5L, 5LS, 5LX		
			0,250	6,4	28,0	41,8	5L, 5LS, 5LX		20
			0,279	7,1	31,2	46,5	5L, 5LS, 5LX		
			0,307	7,8	34,2	51,0	5L, 5LS, 5LX		30
			0,344	8,7	38,2	56,9	5L, 5LS, 5LX		
			0,365	9,3	40,5	60,3	5L, 5LS, 5LX	STD	40
			0,438	11,1	48,2	71,8	5L, 5LS, 5LX		
			0,500	12,7	54,7	81,5	5L, 5LS, 5LX	XS	60
			0,562	14,3	61,2	91,1	5L, 5LS, 5LX		
			0,594	15,1	64,4	95,8			80
			0,625	15,9	67,7	101,0	5L, 5LS, 5LX		
			0,719	18,3	77,0	115,0	5L, 5LS, 5LX		100
			0,812	20,6	86,2	128,0	5L, 5LS		
			0,844	21,4	89,3	133,0			120
			1,000	25,4	104,1	155,0		XXS	140
			1,125	28,6	115,6	172,0			160
12	12,750	323,80	0,172	4,4	23,1	34,4	5L, 5LS, 5LX		
			0,188	4,8	25,2	37,6	5L, 5LS, 5LX		
			0,203	5,2	27,2	40,5	5LS, 5LX		
			0,219	5,6	29,3	43,7	5L, 5LS, 5LX		
			0,250	6,4	33,4	49,7	5L, 5LS, 5LX		20
			0,281	7,1	37,4	55,7	5L, 5LS, 5LX		
			0,312	7,9	41,4	61,7	5L, 5LS, 5LX		
			0,330	8,4	43,8	65,2	5L, 5LS, 5LX		30
			0,344	8,7	45,6	67,9	5L, 5LS, 5LX		
			0,375	9,5	49,6	73,8	5L, 5LS, 5LX	STD	
			0,406	10,3	53,5	79,7	5LS, 5LX		40
			0,438	11,1	57,6	85,8	5L, 5LS, 5LX		
			0,500	12,7	65,4	97,4	5L, 5LS, 5LX	XS	
			0,562	14,3	73,1	109,0	5L, 5LS, 5LX		60
			0,625	15,9	80,9	121,0	5L, 5LS, 5LX		
			0,688	17,5	88,6	132,0	5L, 5LS, 5LX		80
			0,750	19,0	96,1	143,0	5L, 5LS, 5LX		
			0,812	20,6	104	154	5L, 5LS, 5LX		
			0,844	21,4	107	160			100
			0,875	22,2	111	165	5L, 5LS, 5LX		
			1,000	25,4	125	187		XXS	120
			1,125	28,6	140	208			140
			1,312	33,3	160	239			160
14	14,000	355,60	0,188	4,8	27,7	41,3	5L, 5LS, 5LX		
			0,203	5,2	29,9	44,6	5L, 5LS		
			0,210	5,3	30,9	46,1	5LS, 5LX		
			0,219	5,6	32,2	48,0	5L, 5LS, 5LX		
			0,250	6,4	36,7	54,7	5L, 5LS, 5LX		10
			0,281	7,1	41,2	61,3	5L, 5LS, 5LX		
			0,312	7,9	45,6	67,9	5L, 5LS, 5LX		20
			0,344	8,7	50,2	74,7	5L, 5LS, 5LX		
			0,375	9,5	54,6	81,3	5L, 5LS, 5LX	STD	30
			0,406	10,3	58,9	87,8	5LS, 5LX		
			0,438	11,1	63,4	94,5	5L, 5LS, 5LX		40
			0,469	11,9	67,8	101	5LS, 5LX		
			0,500	12,7	72,1	107	5L, 5LS, 5LX	XS	

Size	Outside Diameter		Wall Thickness		Weight		Identification		
in.	in.	mm	in.	mm	ln/ft	kg/m	API	STD XS; XXS	Schedule No
			0,562	14,3	80,7	120	5L, 5LS, 5LX		
			0,594	15,1	85,0	127			60
			0,625	15,9	89,3	133	5L, 5LS, 5LX		
			0,688	17,5	97,8	146	5L, 5LS, 5LX		
			0,750	19,0	106	158	5L, 5LS, 5LX		80
			0,812	20,6	114	170	5L, 5LS, 5LX		
			0,875	22,2	123	183	5L, 5LS, 5LX		
			0,938	23,8	131	195	5L, 5LS, 5LX		100
			1,094	27,8	151	224			120
			1,250	31,8	170	253			140
			1,406	35,7	189	281			160
			2,000	50,8	256	381			
			2,125	54,0	270	401			
			2,200	55,9	277	413			
			2,500	63,5	307	457			
16	16,000	406,40	0,188	4,8	31,8	47,3	5L, 5LS, 5LX		
			0,203	5,2	34,2	51,0	5L, 5LS, 5LX		
			0,219	5,6	36,9	55,0	5L, 5LS, 5LX		
			0,250	6,4	42,0	62,6	5L, 5LS, 5LX		10
			0,281	7,1	47,2	70,3	5L, 5LS, 5LX		
			0,312	7,9	52,3	77,9	5L, 5LS, 5LX		20
			0,344	8,7	57,7	85,7	5L, 5LS, 5LX		
			0,375	9,5	62,6	93,2	5L, 5LS, 5LX	STD	30
			0,406	10,3	67,6	101	5LS, 5LX		
			0,438	11,1	72,8	108	5L, 5LS, 5LX		
			0,469	11,9	77,8	116	5LS, 5LX		
			0,500	12,7	82,8	123	5L, 5LS, 5LX	XS	40
			0,562	14,3	92,7	138	5L, 5LS, 5LX		
			0,625	15,0	103	153	5L, 5LS, 5LX		
			0,656	16,7	108	160			60
			0,688	17,5	113	168	5L, 5LS, 5LX		
			0,750	19,0	122	182	5L, 5LS, 5LX		
			0,812	20,6	132	196	5L, 5LS, 5LX		
			0,844	21,4	137	203			80
			0,875	22,2	141	211	5L, 5LS, 5LX		
			0,938	23,8	151	225	5L, 5LS, 5LX		
			1,000	25,4	160	239	5L, 5LS, 5LX		
			1,031	26,2	165	245			100
			1,062	26,9	169	253	5L, 5LS, 5LX		
			1,125	28,6	179	266	5L, 5LS, 5LX		
			1,219	31,0	192	286			120
			1,438	36,5	224	333			140
			1,594	40,5	245	365			160
18	18,000	457,20	0,188	4,8	35,8	53,3	5L, 5LS, 5LX		
			0,219	5,6	41,6	62,0	5L, 5LS, 5LX		
			0,250	6,4	47,4	70,6	5L, 5LS, 5LX		10
			0,281	7,1	53,2	79,2	5L, 5LS, 5LX		
			0,312	7,9	58,9	87,8	5L, 5LS, 5LX		20
			0,344	8,7	64,9	96,6	5L, 5LS, 5LX		
			0,375	9,5	70,6	105	5L, 5LS, 5LX	STD	
			0,406	10,3	76,3	114	5LS, 5LX		
			0,438	11,1	82,2	122	5L, 5LS, 5LX		30
			0,469	11,9	87,8	131	5LS, 5LX		
			0,500	12,7	93,4	139	5L, 5LS, 5LX	XS	
			0,562	14,3	105	156	5L, 5LS, 5LX		40

Size	Outside Diameter		Wall Thickness		Weight		Identification		
in.	in.	mm	in.	mm	lb/ft	kg/m	API	STD XS; XXS	Schedule No
			0,625	15,9	116	173	5L, 5LS, 5LX		
			0,688	17,5	127	189	5L, 5LS, 5LX		
			0,750	19,0	138	206	5L, 5LS, 5LX		60
			0,812	20,6	149	222	5L, 5LS, 5LX		
			0,875	22,2	160	238	5L, 5LS, 5LX		
			0,938	23,8	171	255	5L, 5LS, 5LX		80
			1,000	25,4	182	270	5L, 5LS, 5LX		
			1,062	27,0	192	286	5L, 5LS, 5LX		
			1,125	28,6	203	302	5L, 5LS, 5LX		
			1,156	29,4	208	310			100
			1,187	30,8	213	317	5L, 5LS, 5LX		
			1,250	31,8	224	333	5L, 5LS, 5LX		
			1,375	34,9	244	363			120
			1,562	39,7	274	408			140
			1,781	45,2	309	459			160
20	20,000	508,00	0,219	5,6	46,3	68,9	5L, 5LS, 5LX		
			0,250	6,4	52,7	78,5	5L, 5LS, 5LX		10
			0,281	7,1	59,2	88,2	5L, 5LS, 5LX		
			0,312	7,9	65,6	97,7	5L, 5LS, 5LX		
			0,344	8,7	72,2	108	5L, 5LS, 5LX		
			0,375	9,5	78,6	117	5L, 5LS, 5LX	STD	20
			0,406	10,3	85,0	127	5LS, 5LX		
			0,438	11,1	91,5	136	5L, 5LS, 5LX		
			0,469	11,9	97,8	146	5LS, 5LX		
			0,500	12,7	104	155	5L, 5LS, 5LX	XS	30
			0,562	14,3	117	174	5L, 5LS, 5LX		
			0,594	15,1	123	183			40
			0,625	15,9	129	193	5L, 5LS, 5LX		
			0,688	17,5	142	211	5L, 5LS, 5LX		
			0,750	19,0	154	230	5L, 5LS, 5LX		
			0,812	20,6	166	248	5L, 5LS, 5LX		60
			0,875	22,2	179	266	5L, 5LS, 5LX		
			0,938	23,8	191	284	5L, 5LS, 5LX		
			1,000	25,4	203	302	5L, 5LS, 5LX		
			1,031	26,2	209	311			80
			1,062	27,0	215	320	5L, 5LS, 5LX		
			1,125	28,6	227	338	5L, 5LS, 5LX		
			1,187	30,2	238	355	5L, 5LS, 5LX		
			1,250	31,8	250	372	5L, 5LS, 5LX		
			1,281	32,5	256	381			100
			1,312	33,3	262	390	5L, 5LS, 5LX		
			1,375	34,9	274	407	5L, 5LS, 5LX		
			1,500	38,1	296	441			120
			1,750	44,4	341	508			140
			1,969	50,0	379	564			160
22	22,000	558,80	0,219	5,6	50,9	75,9	5L, 5LS, 5LX		
			0,250	6,4	58,1	86,5	5L, 5LS, 5LX		10
			0,281	7,1	65,2	97,1	5L, 5LS, 5LX		
			0,312	7,9	72,3	108	5L, 5LS, 5LX		
			0,344	8,7	79,6	118	5L, 5LS, 5LX		
			0,375	9,5	86,6	129	5L, 5LS, 5LX	STD	20
			0,406	10,3	93,6	139	5LS, 5LX		
			0,438	11,1	101	150	5L, 5LS, 5LX		
			0,469	11,9	108	161	5LS, 5LX		
			0,500	12,7	115	171	5L, 5LS, 5LX	XS	30
			0,562	14,3	129	192	5L, 5LS, 5LX		
			0,625	15,9	143	213	5L, 5LS, 5LX		
			0,688	17,5	157	233	5L, 5LS, 5LX		

Size	Outside Diameter		Wall Thickness		Weight		Identification		
in.	in.	mm	in.	mm	ln/ft	kg/m	API	STD XS; XXS	Schedule No
			0,750	19,0	170	254	5L, 5LS, 5LX		
			0,812	20,6	184	274	5L, 5LS, 5LX		
			0,875	22,2	197	294	5L, 5LS, 5LX		60
			0,938	23,8	211	314	5L, 5LS, 5LX		
			1,000	25,4	224	334	5L, 5LS, 5LX		
			1,062	27,0	237	345	5L, 5LS, 5LX		
			1,125	28,6	251	374	5L, 5LS, 5LX		80
			1,187	30,2	264	393	5L, 5LS, 5LX		
			1,250	31,8	277	413	5L, 5LS, 5LX		
			1,312	33,3	290	432	5L, 5LS, 5LX		
			1,375	34,9	303	451	5L, 5LS, 5LX		100
			1,437	36,5	316	470	5L, 5LS, 5LX		
			1,500	38,1	328	489	5L, 5LS, 5LX		
			1,625	41,3	354	526			120
			1,875	47,6	403	600			140
			2,125	54,0	451	671			160
24	24,000	609,60	0,250	6,4	63,4	94,4	5L, 5LS, 5LX		10
			0,281	7,1	71,2	106	5L, 5LS, 5LX		
			0,312	7,9	78,9	118	5L, 5LS, 5LX		
			0,344	8,7	86,9	129	5L, 5LS, 5LX		
			0,375	9,5	94,6	141	5L, 5LS, 5LX	STD	20
			0,406	10,3	102	152	5LS, 5LX		
			0,438	11,1	110	164	5L, 5LS, 5LX		
			0,469	11,9	118	176	5LS, 5LX		
			0,500	12,7	125	187	5L, 5LS, 5LX	X S	
			0,562	14,3	141	210	5L, 5LS, 5LX		30
			0,625	15,9	156	232	5L, 5LS, 5LX		
			0,688	17,5	171	255	5L, 5LS, 5LX		40
			0,750	19,0	186	277	5L, 5LS, 5LX		
			0,812	20,6	201	300	5L, 5LS, 5LX		
			0,875	22,2	216	322	5L, 5LS, 5LX		
			0,938	23,8	231	344	5L, 5LS, 5LX		
			0,969	24,6	238	355			60
			1,000	25,4	246	366	5L, 5LS, 5LX		
			1,062	27,0	260	342	5L, 5LS, 5LX		
			1,125	28,6	275	409	5L, 5LS, 5LX		
			1,187	30,2	289	431	5L, 5LS, 5LX		
			1,219	31,0	297	441			80
			1,250	31,8	304	452	5L, 5LS, 5LX		
			1,312	33,3	318	474	5L, 5LS, 5LX		
			1,375	34,9	332	495	5L, 5LS, 5LX		
			1,437	36,5	346	516	5L, 5LS, 5LX		
			1,500	38,1	360	537	5L, 5LS, 5LX		
			1,531	38,9	367	547			100
			1,562	39,7	374	558	5L, 5LS, 5LX		
			1,812	46,0	430	639			120
			2,062	52,4	483	719			140
			2,344	59,5	542	807			160
26	26,000	660,40	0,250	6,4	68,8	102	5L, 5LS, 5LX		
			0,281	7,1	77,2	115	5L, 5LS, 5LX		
			0,312	7,9	85,6	128	5L, 5LS, 5LX		10
			0,344	8,7	94,3	140	5L, 5LS, 5LX		
			0,375	9,5	103	153	5L, 5LS, 5LX	STD	
			0,406	10,3	111	165	5LS, 5LX		
			0,438	11,1	120	178	5L, 5LS, 5LX		
			0,469	11,9	128	190	5LS, 5Lh		
			0,500	12,7	136	203	5L, 5LS, 5LX	XS	20
			0,562	14,3	153	227	5L, 5LS, 5LX		

Size	Outside Diameter		Wall Thickness		Weight		Identification		
in.	in.	mm	in.	mm	lb/ft	kg/m	API	STD XS; XXS	Schedule No
			0,625	15,9	169	252	5L, 5LS, 5LX		
			0,688	17,5	186	277	5L, 5LS, 5LX		
			0,750	19,0	202	301	5L, 5LS, 5LX		
			0,812	20,6	218	325	5L, 5LS, 5LX		
			0,875	22,2	235	350	5L, 5LS, 5LX		
			0,938	23,8	251	374	5L, 5LS, 5LX		
			1,000	25,4	267	398	5L, 5LS, 5LX		
28	28,000	711,20	0,250	6,4	74,1	110	5L, 5LS, 5LX		
			0,281	7,1	83,2	124	5L, 5LS, 5LX		
			0,312	7,9	92,3	137	5L, 5LS, 5LX		10
			0,344	8,7	102	151	5LS, 5LX		
			0,375	9,5	111	165	5L, 5LS, 5LX	STD	
			0,406	10,3	120	178	5LS, 5LX		
			0,438	11,1	129	192	5L, 5LS, 5LX		
			0,469	11,9	138	205	5LS, 5LX		
			0,500	12,7	147	219	5L, 5LS, 5LX	XS	20
			0,562	14,3	165	245	5L, 5LS, 5LX		
			0,625	15,9	183	272	5L, 5LS, 5LX		30
			0,688	17,5	201	299	5L, 5LS, 5LX		
			0,750	19,0	218	325	5L, 5LS, 5LX		
			0,812	20,6	236	351	5L, 5LS, 5LX		
			0,875	22,2	253	378	5L, 5LS, 5LX		
			0,938	23,8	271	404	5L, 5LS, 5LX		
			1,000	25,4	288	430	5L, 5LS, 5LX		
30	30,000	762	0,250	6,4	79,4	118	5L, 5LS, 5LX		
			0,281	7,1	89,2	133	5L, 5LS, 5LX		
			0,312	7,9	98,9	147	5L, 5LS, 5LX		10
			0,344	8,7	109	162	5LS, 5LX		
			0,375	9,5	119	177	5L, 5LS, 5LX	STD	
			0,406	10,3	128	191	5LS, 5LX		
			0,438	11,1	138	206	5L, 5LS, 5LX		
			0,469	11,9	148	220	5LS, 5LX		
			0,500	12,7	158	235	5L, 5LS, 5LX	XS	20
			0,562	14,3	177	263	5L, 5LS, 5LX		
			0,625	15,9	196	292	5L, 5LS, 5LX		30
			0,688	17,5	215	321	5L, 5LS, 5LX		
			0,750	19,0	234	349	5L, 5LS, 5LX		
			0,812	20,6	253	377	5L, 5LS, 5LX		
			0,875	22,2	272	405	5L, 5LS, 5LX		
			0,938	23,8	291	434	5L, 5LS, 5LX		
			1,000	25,4	310	461	5L, 5LS, 5LX		
32	32,000	812,80	0,250	6,4	84,8	126	5L, 5LS, 5LX		
			0,281	7,1	95,2	142	5L, 5LS, 5LX		
			0,312	7,9	106	157	5L, 5LS, 5LX		10
			0,344	8,7	116	173	5LS, 5LX		
			0,375	9,5	127	189	5L, 5LS, 5LX	STD	
			0,406	10,3	137	204	5LS, 5LX		
			0,438	11,1	148	220	5L, 5LS, 5LX		
			0,469	11,9	158	235	5LS, 5LX		
			0,500	12,7	168	251	5L, 5LS, 5LX	XS	20
			0,562	14,3	189	281	5L, 5LS, 5LX		
			0,625	15,9	209	312	5L, 5LS, 5LX		30
			0,688	17,5	230	343	5L, 5LS, 5LX		40
			0,750	19,0	250	373	5L, 5LS, 5LX		
			0,812	20,6	270	403	5L, 5LS, 5LX		
			0,875	22,2	291	433	5L, 5LS, 5LX		
			0,938	23,8	311	463	5L, 5LS, 5LX		
			1,000	25,4	331	493	5L, 5LS, 5LX		

Size	Outside Diameter		Wall Thickness		Weight		Identification		
in.	in.	mm	in.	mm	ln/ft	kg/m	API	STD XS; XXS	Schedule No
34	34,000	863,60	0,250	6,4	90,1	134	5L, 5LS, 5LX		
			0,281	7,1	101	151	5L, 5LS, 5LX		
			0,312	7,9	112	167	5L, 5LS, 5LX		10
			0,344	8,7	124	184	5LS, 5LX		
			0,375	9,5	135	201	5L, 5LS, 5LX	STD	
			0,406	10,3	146	217	5LS, 5LX		
			0,438	11,1	157	234	5L, 5LS, 5LX		
			0,469	11,9	168	250	5LS, 5LX		
			0,500	12,7	179	266	5L, 5LS, 5LX	XS	20
			0,562	14,3	201	299	5L, 5LS, 5LX		
			0,625	15,9	223	332	5L, 5LS, 5LX		30
			0,688	17,5	245	365	5L, 5LS, 5LX		40
			0,750	19,0	266	397	5L, 5LS, 5LX		
			0,812	20,6	288	429	5L, 5LS, 5LX		
			0,875	22,2	310	461	5L, 5LS, 5LX		
			0,938	23,8	331	493	5L, 5LS, 5LX		
36	36,000	914,40	1,000	25,4	352	525	5L, 5LS, 5LX		
			0,250	6,4	95,4	142	5L, 5LS, 5LX		
			0,281	7,1	107	160	5L, 5LS, 5LX		
			0,312	7,9	119	177	5L, 5LS, 5LX		10
			0,344	8,7	131	195	5LS, 5LX		
			0,375	9,5	143	213	5L, 5LS, 5LX	STD	
			0,406	10,3	154	230	5LS, 5LX		
			0,438	11,1	166	248	5L, 5LS, 5LX		
			0,469	11,9	178	265	5LS, 5LX		
			0,500	12,7	190	282	5L, 5LS, 5LX	XS	20
			0,562	14,3	213	317	5L, 5LS, 5LX		
			0,625	15,9	236	352	5L, 5LS, 5LX		30
			0,688	17,5	259	386	5L, 5LS, 5LX		
			0,750	19,0	282	421	5L, 5LS, 5LX		40
			0,812	20,6	305	455	5L, 5LS, 5LX		
			0,875	22,2	328	489	5L, 5LS, 5LX		
			0,938	23,8	351	523	5L, 5LS, 5LX		
			1,000	25,4	374	557	5L, 5LS, 5LX		
38	38,000	965,20	0,312	7,9	126	187	5L, 5LS, 5LX		
			0,344	8,7	138	206	5L, 5LS, 5LX		
			0,375	9,5	151	224	5L, 5LS, 5LX		
			0,406	10,3	163	243	5L, 5LS, 5LX		
			0,438	11,1	176	262	5L, 5LS, 5LX		
			0,469	11,9	188	280	5L, 5LS, 5LX		
			0,500	12,7	200	298	5L, 5LS, 5LX		
			0,562	14,3	225	335	5L, 5LS, 5LX		
			0,625	15,9	249	372	5L, 5LS, 5LX		
			0,688	17,5	274	408	5L, 5LS, 5LX		
			0,750	19,0	298	444	5L, 5LS, 5LX		
			0,812	20,6	322	480	5L, 5LS, 5LX		
			0,875	22,2	347	517	5L, 5LS, 5LX		
			0,938	23,8	371	553	5L, 5LS, 5LX		
			1,000	25,4	395	589	5L, 5LS, 5LX		
40	40,000	1016	0,312	7,9	132	197	5L, 5LS, 5LX		
			0,344	8,7	146	217	5L, 5LS, 5LX		
			0,375	9,5	159	236	5L, 5LS, 5LX		
			0,406	10,3	172	256	5L, 5LS, 5LX		
			0,438	11,1	185	276	5L, 5LS, 5LX		
			0,469	11,9	198	295	5L, 5LS, 5LX		
			0,500	12,7	211	314	5L, 5LS, 5LX		
			0,562	14,3	237	353	5L, 5LS, 5LX		

Size	Outside Diameter		Wall Thickness		Weight		Identification		
in.	in.	mm	in.	mm	lb/ft	kg/m	API	STD XS; XXS	Schedule No
			0,625	15,9	263	391	5L, 5LS, 5LX		
			0,688	17,5	289	430	5L, 5LS, 5LX		
			0,050	19,0	314	468	5L, 5LS, 5LX		
			0,812	20,6	340	506	5L, 5LS, 5LX		
			0,875	22,2	366	545	5L, 5LS, 5LX		
			0,938	23,8	391	583	5L, 5LS, 5LX		
			1,000	25,4	417	620	5L, 5LS, 5LX		
42	42,000	1066,80	0,344	8,7	153	228	5L, 5LS, 5LX		
			0,375	9,5	167	248	5L, 5LS, 5LX		
			0,406	10,3	180	269	5L, 5LS, 5LX		
			0,438	11,1	194	290	5L, 5LS, 5LX		
			0,460	11,9	208	310	5L, 5LS, 5LX		
			0,500	12,7	222	330	5L, 5LS, 5LX		
			0,562	14,3	249	370	5L, 5LS, 5LX		
			0,625	15,9	276	411	5L, 5LS, 5LX		
			0,688	17,5	304	452	5L, 5LS, 5LX		
			0,750	19,0	330	492	5L, 5LS, 5LX		
			0,812	20,6	357	532	5L, 5LS, 5LX		
			0,875	22,2	384	572	5L, 5LS, 5LX		
			0,938	23,8	411	615	5L, 5LS, 5LX		
			1,000	25,4	438	652	5L, 5LS, 5LX		
44	44,000	1117,60	0,344	8,7	160	239	5L, 5LS, 5LX		
			0,375	9,5	175	260	5L, 5LS, 5LX		
			0,406	10,3	189	282	5L, 5LS, 5LX		
			0,438	11,1	204	304	5L, 5LS, 5LX		
			0,469	11,9	218	325	5L, 5LS, 5LX		
			0,500	12,7	232	346	5L, 5LS, 5LX		
			0,562	14,3	261	388	5L, 5LS, 5LX		
			0,625	15,9	290	431	5L, 5LS, 5LX		
			0,688	17,5	318	474	5L, 5LS, 5LX		
			0,750	19,0	346	516	5L, 5LS, 5LX		
			0,812	20,6	375	558	5L, 5LS, 5LX		
			0,875	22,2	403	600	5L, 5LS, 5LX		
			0,938	23,8	431	643	5L, 5LS, 5LX		
			1,000	25,4	474	684	5L, 5LS, 5LX		
46	46,000	1168,40	0,344	8,7	168	250	5L, 5LS, 5LX		
			0,375	9,5	183	272	5L, 5LS, 5LX		
			0,406	10,3	198	294	5L, 5LS, 5LX		
			0,438	11,1	213	317	5L, 5LS, 5LX		
			0,469	11,9	228	340	5L, 5LS, 5LX		
			0,500	12,7	243	362	5L, 5LS, 5LX		
			0,562	14,3	273	406	5L, 5LS, 5LX		
			0,625	15,9	303	451	5L, 5LS, 5LX		
			0,688	17,5	333	496	5L, 5LS, 5LX		
			0,750	19,0	362	540	5L, 5LS, 5LX		
			0,812	20,6	392	584	5L, 5LS, 5LX		
			0,875	22,2	422	628	5L, 5LS, 5LX		
			0,938	23,8	451	602	5L, 5LS, 5LX		
			1,000	25,4	481	716	5L, 5LS, 5LX		

Size	Outside Diameter		Wall Thickness		Weight		Identification		
in.	in.	mm	in.	mm	lb/ft	kg/m	API	STD XS; XXS	Schedule No
48	48,000	1219,20	0,344	8,7	175	261	5L, 5LS, 5LX		
			0,375	9,5	191	284	5L, 5LS, 5LX		
			0,406	10,3	206	307	5L, 5LS, 5LX		
			0,438	11,1	222	331	5L, 5LS, 5LX		
			0,469	11,9	238	355	5L, 5LS, 5LX		
			0,500	12,7	254	378	5L, 5LS, 5LX		
			0,562	14,3	285	424	5L, 5LS, 5LX		
			0,625	15,9	316	471	5L, 5LS, 5LX		
			0,688	17,5	348	518	5L, 5LS, 5LX		
			0,750	19,0	378	564	5L, 5LS, 5LX		
			0,812	20,6	409	610	5L, 5LS, 5LX		
			0,875	22,2	440	656	5L, 5LS, 5LX		
			0,938	23,8	471	702	5L, 5LS, 5LX		
			1,000	25,4	502	748	5L, 5LS, 5LX		

Dimensions and weights - ASTM

NB	Outside Diameter		Wall Thickness		Weight		Designation	Schedule
	In.	mm	In.	mm	lb/ft	kg/m	STD/XS/XXS	Nos[1]
1/8“	0.405	10,3	0.049	1,24	0,19	0,28		10S
			0.068	1,73	0.24	0,36	STD	40(S)
			0.095	2,41	0.31	0,46	XS	80(S)
1/4“	0.540	13,7	0.065	1,65	0.33	0,49		10S
			0.088	2,24	0.42	0,63	STD	40(S)
			0.119	3,02	0.54	0,80	XS	80(S)
3/8“	0.675	17,1	0.065	1,65	0.42	0,63		10S
			0.091	2,31	0.57	0,85	STD	40(S)
			0.126	3,20	0.74	1,10	XS	80(S)
1/2“	0.840	21,3	0.065	1,65	0.54	0,80		5S
			0.083	2,11	0.67	1,00		10S
			0.109	2,77	0.85	1,26	STD	40(S)
			0.147	3,73	1.09	1,62	XS	80(S)
			0.188	4,78	1.31	1,95		160
			0.294	7,47	1.71	2,54	XXS	
3/4“	1.050	26,7	0.065	1,65	0.69	1,03		5S
			0.083	2,11	0.86	1,28		10S
			0.113	2,87	1.13	1,68	STD	40(S)
			0.154	3,91	1.47	2,19	XS	80(S)
			0.219	5,56	1.94	2,89		160
			0.308	7,82	2.44	3,63	XXS	
1“	1.315	33,4	0.065	1,65	0.87	1,29		5S
			0.109	2,77	1.40	2,08		10S
			0.133	3,38	1.68	2,50	STD	40(S)
			0.179	4,55	2.17	3,23	XS	80(S)
			0.250	6,35	2.84	4,23		160
			0.358	9,09	3.66	5,45	XXS	
1 1/4“	1.660	42,2	0.065	1,65	1.11	1,65		5S
			0.109	2,77	1.81	2,69		10S
			0.140	3,56	2.27	3,38	STD	40(S)
			0.191	4,85	3.00	4,46	XS	80(S)
			0.250	6,35	3.76	5,60		160
			0.382	9,70	5.21	7,75	XXS	
1 1/2“	1.900	48,3	0.065	1,65	1.28	1,90		5S
			0.109	2,77	2.09	3,12		10S
			0.145	3,68	2.72	4,05	STD	40(S)
			0.200	5,08	3.63	5,40	XS	80(S)
			0.281	7,14	4.86	7,23		160
			0.400	10,20	6.41	9,54	XXS	
2“	2.375	60,3	0.065	1,65	1.61	2,38		5S
			0.109	2,77	2.64	3,94		10S
			0.154	3,91	3.65	5,43	STD	40(S)
			0.218	5,54	5.02	7,47	XS	80(S)
			0.344	8,74	7.46	11,10		160
			0.436	11,10	9.03	13,40	XXS	
2 1/2“	2.875	73,0	0.083	2,11	2.48	3,71		5S
			0.120	3,05	3.53	5,26		10S
			0.203	5,16	5.79	8,62	STD	40(S)
			0.276	7,01	7.66	11,40	XS	80(S)
			0.375	9,52	10.01	14,90		160
			0.552	14,00	13.70	20,40	XXS	
3“	3.500	88,9	0.083	2,11	3.03	4,50		5S
			0.120	3,05	4.33	6,45		10S
			0.125	3,18	4.51	6,71		
			0.156	3,96	5.58	8,30		
			0.188	4,78	6.63	9,87		
			0.216	5,49	7.58	11,30	STD	40(S)
			0.250	6,35	8.68	12,90		
			0.281	7,14	9.67	14,40		
			0.300	7,62	10.25	15,30	XS	80(S)
			0.438	11,10	14.31	21,30		160
			0.600	15,20	18.58	27,70	XXS	
3 1/2“	4.000	101,6	0.083	2,11	3.48	5,20		5S
			0.120	3,05	4.97	7,40		10S
			0.125	3,18	5.17	7,69		
			0.156	3,96	6.41	9,54		
			0.188	4,78	7.63	11,40		
			0.226	5,74	9.11	13,60	STD	40(S)
			0.250	6,35	10.01	14,90		
			0.281	7,14	11.17	16,60		
			0.318	8,08	12.51	18,60	XS	80(S)
4“	4.500	114,3	0.083	2,11	3.92	5,81		5S
			0.120	3,05	5.61	8,34		10S
			0.125	3,18	5.84	8,69		
			0,156	3,96	7.25	10,80		

NB	Outside Diameter		Wall Thickness		Weight		Designation	Schedule
	In.	mm	In.	mm	lb/ft	kg/m	STD/XS/XXS	Nos[1]
			0.188	4,78	8.64	12,90		
			0.219	5,56	10.00	14,90		
			0.237	6,02	10.79	16,10	STD	40(S)
			0.250	6,35	11.35	16,90		
			0.281	7,14	12.67	18,90		
			0.312	7,92	13.98	20,80		
			0.337	8,56	14.98	22,30	XS	80(S)
			0.438	11,10	18.98	28,20		120
			0.531	13,50	22.52	33,50		160
			0.674	17,10	27.54	41,00	XXS	
5“	5.563	141,3	0.109	2,77	6.36	9,45		5S
			0.134	3,40	7.77	11,60		10S
			0.156	3,96	9.02	13,40		
			0.188	4,78	10.76	16,00		
			0.219	5,56	12.49	18,60		
			0.258	6,55	14.62	21,80	STD	40S
			0.281	7,14	15.87	23,60		
			0.312	7,92	17.52	26,10		
			0.344	8,74	19.16	28,50		
			0.375	9,52	20.78	30,90	XS	80S
			0.500	12,70	27.40	40,20		120
			0.625	15,90	32.96	49,00		160
			0.750	19,10	38.55	57,40	XXS	
6“	6.625	168,3	0.109	2,77	7.60	11,30		5S
			0.134	3,40	9.29	13,80		10S
			0.188	4,78	12.89	19,20		
			0.219	5,56	14.97	22,30		
			0.250	6,35	17.02	25,30		
			0.280	7,11	18.97	28,20	STD	40(S)
			0.312	7,92	21.07	31,40		
			0.344	8,74	23.06	34,30		
			0.375	9,52	25.03	37,20		
			0.432	11,00	28.57	42,50	XS	80(S)
			0.562	14,30	36.42	54,20		120
			0.719	18,30	45.34	67,50		160
			0.864	21,90	53.16	79,10	XXS	
8“	8.625	219,1	0.109	2,77	9.93	14,80		5S
			0.148	3,76	13.40	19,90		10S
			0.188	4,78	16.90	25,10		
			0.203	5,16	18.27	27,20		
			0.219	5,56	19.64	29,20		
			0.250	6,35	22.36	33,30		20
			0.277	7,04	24.70	36,80		30
			0.312	7,92	27.74	41,30		
			0.322	8,18	28.55	42,50	STD	40(S)
			0.344	8,74	30.40	45,20		
			0.375	9,52	33.04	49,20		
			0.406	10,30	35.66	53,10		60
			0.438	11,10	38.26	56,90		
			0.500	12,70	43.39	64,60	XS	80(S)
			0.594	15,10	50.93	75,80		100
			0.719	18,30	60.69	90,30		120
			0.812	20,60	67.79	101,00		140
			0.875	22,20	72.42	108,00	XXS	
			0.906	23,00	74.71	111,00		160
10“	10.750	273,0	0.134	3,40	15.23	22,60		5S
			0.165	4,19	18.70	27,80		10S
			0.188	4,78	21.15	31,50		
			0.203	5,16	22.88	34,00		
			0.219	5,56	24.60	36,60		
			0.250	6,35	28.04	41,70		20
			0.279	7,09	31.20	46,40		
			0.307	7,80	34.24	51,00		30
			0.344	8,74	38.20	56,80		
			0.365	9,27	40.48	60,20	STD	40(S)
			0.438	11,10	48.19	71,70		
			0.500	12,70	54.74	81,50	XS	60/80S
			0.594	15,10	64.40	95,80		80
			0.719	18,30	77.00	115,00		100
			0.844	21,40	89.27	133,00		120
			1.000	25,40	104.13	155,00	XXS	140
			1.125	28,60	115.65	172,00		160
12“	12.750	323,9	0.156	3,96	22.22	33,00		5S
			0.180	4,57	24.20	36,00		10S
			0.203	5,16	27.22	40,50		
			0.219	5,56	29.28	43,60		
			0.250	6,35	33.38	49,70		20
			0.281	7,14	37.45	55,70		
			0.312	7,92	41.51	61,80		
			0.330	8,38	43.77	65,10		30

Dimensions and weights - ASTM

	Outside Diameter		Wall Thickness		Weight		Designation	Schedule
NB	In.	mm	In.	mm	lb/ft	kg/m	STD/XS/XXS	Nos[1]
12"	12.750	323,9	0.344	8,74	45.55	67,80		
			0.375	9,52	49.56	73,80	STD	40 S
			0.406	10,30	53.56	79,70		40
			0.438	11,10	57.53	85,60		
			0.500	12,70	65.42	97,40	XS	80 S
			0.562	14,30	73.22	109,00		60
			0.688	17,50	88.57	132,00		80
			0.844	21,40	107.29	160,00		100
			1.000	25,40	125.49	187,00	XXS	120
			1.125	28,60	139.68	208,00		140
			1.312	33,30	160.33	239,00		160
14"	14.000	355,6	0.156	3,96	23.07	34,20		5 S
			0.188	4,78	27.73	41,20		10 S
			0.210	5,33	30.93	46,00		
			0.219	5,56	32.20	47,90		
			0.250	6,35	36.71	54,60		10
			0.281	7,14	41.21	61,30		
			0.312	7,92	45.68	68,00		20
			0.344	8,74	50.14	74,60		
			0.375	9,52	54.57	81,20	STD	30/40 S
			0.438	11,10	63.37	94,30		40
			0.469	11,90	67.78	101,00		
			0.500	12,70	72.09	107,00	XS	80 S
			0.594	15,10	85.01	127,00		60
			0.750	19,10	106.13	158,00		80
			0.938	23,80	130.79	195,00		100
			1.094	27,80	150.76	224,00		120
			1.250	31,80	170.22	253,00		140
			1.406	35,70	189.15	281,00		160
			2.000	50,80	256.32	381,00		
			2.125	54,00	269.51	401,00		
			2.200	55,90	277.26	413,00		
			2.500	63,50	307.05	457,00		
16"	16.000	406,4	0.165	4,19	27.90	41,60		5 S
			0.188	4,78	31.75	47,30		10 S
			0.219	5,56	36.87	54,90		
			0.250	6,35	42.05	62,60		10
			0.281	7,14	47.22	70,30		
			0.312	7,92	52.36	77,90		20
			0.344	8,74	57.84	85,50		
			0.375	9,52	62.58	93,10	STD	30/40 S
			0.438	11,10	72.72	108,00		
			0.469	11,90	77.75	116,00		
			0.500	12,70	82.77	123,00	XS	40/80 S
			0.656	16,70	107.54	160,00		60
			0.844	21,40	136.58	203,00		80
			1.031	26,20	164.86	245,00		100
			1.219	31,00	192.40	286,00		120
			1.438	36,50	223.57	333,00		140
			1.594	40,50	245.22	365,00		160
18"	18.000	457,2	0.165	4,19	31.43	46,80		5 S
			0.188	4,78	35.77	53,20		10 S
			0.250	6,35	47.39	70,50		10
			0.281	7,14	53.22	79,20		
			0.312	7,92	59.03	87,80		20
			0.344	8,74	64.82	96,50		
			0.375	9,52	70.59	105,00	STD	40 S
			0.406	10,30	76.34	114,00		
			0.438	11,10	82.06	122,00		30
			0.469	11,90	87.77	131,00		
			0.500	12,70	93.45	139,00	XS	80 S
			0.562	14,30	104.76	156,00		40
			0.750	19,10	138.17	206,00		60
			0.938	23,80	170.84	254,00		80
			1.156	29,40	208.00	310,00		100
			1.375	34,90	244.14	363,00		120
			1.562	39,70	274.30	408,00		140
			1.781	45,20	308.55	459,00		160
20"	20.000	508,0	0.188	4,78	39.78	52,20		5 S
			0.218	5,54	46.06	68,50		10 S
			0.250	6,35	52.73	78,50		10
			0.281	7,14	59.23	88,10		
			0.312	7,92	65.71	97,80		
			0.344	8,74	72.16	107,00		
			0.375	9,52	78.60	117,00	STD	20/40 S
			0.406	10,30	85.01	127,00		
			0.438	11,10	91.41	136,00		
			0.469	11,90	97.78	146,00		
			0.500	12,70	104.13	155,00	XS	30/80 S
			0.594	15,10	123.06	183,00		40
			0.812	20,60	166.50	248,00		60
			1.031	26,20	208.92	311,00		80

	Outside Diameter		Wall Thickness		Weight		Designation	Schedule
NB	In.	mm	In.	mm	lb/ft	kg/m	STD/XS/XXS	Nos[1]
			1.281	32,50	256.15	381,00		100
			1.500	38,10	296.37	441,00		120
			1.750	44,50	341.10	508,00		140
			1.969	50,00	379.14	564,00		160
22"	22.000	558,8	0.188	4,78	43.80	65,20		5 S
			0.218	5,54	50.72	75,40		10 S
			0.250	6,35	58.07	86,40		10
			0.281	7,14	65.24	97,10		
			0.312	7,92	72.38	108,00		
			0.344	8,74	79.51	118,00		
			0.375	9,52	86.61	129,00	STD	20/40 S
			0.406	10,30	93.69	139,00		
			0.438	11,10	100.75	150,00		
			0.469	11,90	105.79	160,00		
			0.500	12,70	114.81	171,00	XS	30/80 S
			0.625	15,90	142.68	212,00		40
			0.875	22,20	197.42	294,00		60
			1.125	28,60	250.82	373,00		80
			1.375	34,90	302.88	451,00		100
			1.625	41,30	353.61	526,00		120
			1.875	47,60	403.01	600,00		140
			2.125	54,00	451.07	671,00		160
24"	24.000	609,6	0.218	5,54	55.38	82,60		5 S
			0.250	6,35	63.41	94,40		30/80 S
			0.281	7,14	71.25	106,00		
			0.312	7,92	79.06	118,00		
			0.344	8,74	86.85	129,00		
			0.375	9,52	94.62	141,00	STD	20/40 S
			0.406	10,30	102.37	152,00		
			0.438	11,10	110.10	164,00		
			0.469	11,90	117.81	175,00		
			0.500	12,70	125.49	187,00	XS	80 S
			0.562	14,30	140.80	210,00		30
			0.688	17,50	171.17	255,00		40
			0.969	24,60	238.29	355,00		60
			1.219	31,00	296.53	441,00		80
			1.531	38,90	367.45	547,00		100
			1.812	46,00	429.50	639,00		120
			2.062	52,40	483.24	719,00		140
			2.344	59,50	542.09	807,00		160
26"	26.000	660,4	0.250	6,35	68.75	102,40		
			0.281	7,14	77.18	114,96		
			0.312	7,92	85.60	127,50		10
			0.344	8,74	94.26	140,40		
			0.375	9,52	102.63	152,87	STD	
			0.438	11,13	119.57	178,10		
			0.500	12,70	136.17	202,83	XS	20
			0.562	14,27	152.68	227,42		
			0.625	15,88	169.38	252,29		
			0.688	17,48	185.99	277,03		
			0.750	19,05	202.25	301,25		
			0.812	20,62	218.43	325,35		
			0.875	22,22	234.79	349,72		
			0.938	23,83	251.07	373,97		
			1.000	25,40	267.00	397,70		
28"	28.000	711,2	0.250	6,35	74.09	110,36		
			0.281	7,14	83.19	123,91		
			0.312	7,92	92.26	137,42		10
			0.375	9,52	110.64	164,80	STD	
			0.438	11,13	128.93	192,04		
			0.500	12,70	146.85	218,73	XS	20
			0.562	14,27	164.69	245,31		
			0.625	15,88	182.73	272,18		30
			0.688	17,48	200.68	298,91		
			0.750	19,05	218.27	325,11		
			0.812	20,62	235.78	351,19		
			0.875	22,22	253.48	377,56		
			0.938	23,83	271.10	403,80		
			1.000	25,40	288.36	429,51		
30"	30.000	762,0	0.250	6,35	79.43	118,31		
			0.281	7,14	89.19	132,85		
			0.312	7,92	98.93	147,36		10
			0.375	9,52	118.65	176,73	STD	
			0.438	11,13	138.29	205,98		
			0.500	12,70	157.53	234,64	XS	20
			0.562	14,27	176.69	263,18		
			0.625	15,88	196.08	292,06		30
			0.688	17,48	215.38	320,81		
			0.750	19,05	234.29	348,97		
			0.812	20,62	253.12	377,02		
			0.875	22,22	272.17	405,40		

NB	Outside Diameter In.	Outside Diameter mm	Wall Thickness In.	Wall Thickness mm	Weight lb/ft	Weight kg/m	Designation STD/XS/XXS	Schedule Nos[1]
30“	30.000	762,0	0.938	23,83	291.14	433,65		
			1.000	25,40	309.72	461,33		
32“	32.000	812,8	0.250	6,53	84.77	126,26		
			0.281	7,14	95.19	141,79		
			0.312	7,92	105.59	157,28		10
			0.375	9,52	126.66	188,66	STD	
			0.438	11,13	147.64	219,91		
			0.500	12,70	168.21	250,55	XS	20
			0.562	14,27	188.70	281,07		
			0.625	15,88	209.43	311,95		30
			0.688	17,48	230.08	342,70		40
			0.750	19,05	250.31	372,84		
			0.812	20,62	270.47	402,87		
			0.875	22,22	290.86	433,24		
			0.938	23,83	311.17	463,49		
			1.000	25,40	331.08	493,14		
34“	34.000	863,6	0.250	6,35	90.11	134,22		
			0.281	7,14	101.19	150,72		
			0.312	7,92	112.25	167,20		10
			0.375	9,52	134.67	200,59	STD	
			0.438	11,13	157-00	233,85		
			0.500	12,70	178.89	266,46	XS	20
			0.562	14,27	200.70	298,94		
			0.625	15,88	222.78	331,83		30
			0.688	17,48	244.77	364,58		40
			0.750	19,05	266.33	396,77		
			0.812	20,62	287.81	428,69		
			0.875	22,22	309.55	461,07		
			0.938	23,83	331.21	493,34		
			1.000	25,40	352.44	524,96		
36“	36.000	914,4	0.250	6,35	95.45	142,17		
			0.281	7,14	107.20	159,67		
			0.312	7,92	118.92	117,13		10
			0.375	9,52	142.88	212,52	STD	
			0.438	11,13	166.35	247,78		
			0.500	12,70	189.57	282,36	XS	20
			0.562	14,27	212.70	316,82		
			0.625	15,88	236.13	351,72		30
			0.688	17,48	259.47	386,48		
			0.750	19,05	282.35	420,56		40
			0.812	20,62	305.16	454,54		
			0.875	22,22	328.24	488,91		
			0.938	22,83	351.25	523,19		
			1.000	25,40	373.80	556,78		
38“	38.000	965,2	0.312	7,92	125.58	187,05		
			0.344	8,74	138.35	206,07		
			0.375	9,52	150.69	224,45	STD	
			0.406	10,31	163.01	242,80		
			0.438	11,13	175.71	261,72		
			0.469	11,91	187.99	280,01		
			0.500	12,70	200.25	298,27	XS	
			0.562	14,27	224.71	334,71		
			0.625	15,88	249.48	371,60		
			0.688	17,48	274.16	408,36		
			0.750	19,05	298.37	444,42		
			0.812	20,62	322.50	480,36		
			0.875	22,22	346.93	516,75		
			0.938	23,83	371.28	553,02		
			1.000	25,40	395.16	588,59		
40“	40.000	1016,0	0.312	7,92	132.25	196,99		
			0.344	8,74	145.69	217,01		
			0.375	9,52	158.70	236,68	STD	
			0.406	10,31	171.68	255,72		
			0.438	11,13	185.06	275,66		
			0.469	11,91	198.01	294,94		
			0.500	12,70	210.93	314,18	XS	
			0.562	14,27	236,17	352,58		
			0.625	15,88	262.83	391,49		
			0.688	17,48	288.86	430,26		
			0.750	19,05	314.39	468,28		
			0.812	20,62	339.84	506,19		
			0.875	22,22	368.62	544,59		
			0.938	23,83	391.32	582,87		
			1.000	25,40	416.52	620,41		
42“	42.000	1066,8	0.344	8,74	153.04	227,95		
			0.375	9,52	166.71	248,31	STD	
			0.406	10,31	180.35	268,63		
			0.438	11,13	194.42	289,59		
			0.469	11,91	208.03	309,86		
			0.500	12,70	221.61	330,09	XS	

NB	Outside Diameter In.	Outside Diameter mm	Wall Thickness In.	Wall Thickness mm	Weight lb/ft	Weight kg/m	Designation STD/XS/XXS	Schedule Nos[1]
42“	42.000	1066,8	0.562	14,27	248.72	370,47		
			0.625	15,88	276.18	411,37		
			0.688	17,48	303.55	452,14		
			0.750	19,05	330.41	492,15		
			0.812	20,62	357.19	532,03		
			0.875	22,22	384.31	572,43		
			0.938	23,83	411.35	612,71		
			1.000	25,40	437.88	652,22		
44“	44.000	1117,6	0.344	8,74	160.39	238,90		
			0.375	9,52	174.72	260,25	STD	
			0.406	10,31	189.03	281,56		
			0.438	11,13	203.78	303,53		
			0.469	11,91	218.04	324,77		
			0.500	12,70	232.29	346,00	XS	
			0.562	14,27	260.72	388,34		
			0.625	15,88	289.53	431,25		
			0.688	17,48	318.25	474,03		
			0.750	19,05	346.43	516,01		
			0.812	20,62	374.53	557,86		
			0.875	22,22	403.00	600,27		
			0.938	23,83	431.39	642,56		
			1.000	25,40	459.24	648,04		
46“	46.000	1168,4	0.344	8,74	167.74	249,85		
			0.375	9.52	182.73	272,18	STD	
			0.406	10,31	197.70	294,47		
			0.438	11,13	213.13	317,46		
			0.469	11,91	228.06	339,70		
			0.500	12,70	242.97	361,90	XS	
			0.562	14,27	272.73	406,23		
			0.625	15,88	302.88	451,14		
			0.688	17,48	332.95	495,93		
			0.750	19,05	362.45	539,87		
			0.812	20,62	391.88	583,71		
			0.875	22,22	421.69	628,11		
			0.938	23,83	451.42	672,39		
			1.000	25,40	480.60	715.85		
48“	48.000	1219,2	0.344	8,74	175.08	260,75		
			0.375	9,52	190.74	284,11	STD	
			0.406	10,31	206.37	307,39		
			0.438	11,13	222.49	331,40		
			0.469	11,91	238.08	354,62		
			0.500	12,70	253.65	377,81	XS	
			0.562	14,27	284.73	424,11		
			0.625	15,88	316.23	471,02		
			0.750	19,05	378.47	563,73		
			0.812	20,62	409.22	609,53		
			0.875	22,22	440.38	655,95		
			0.938	23,83	471.46	702,24		
			1.000	25,40	501.96	747,67		
50“	50.000	1270,0	0.312	7,92	166.00	247,00		
			0.344	8,74	183.00	272,00		
			0.375	9,52	199.00	296,00	STD	
			0.406	10,30	215.00	320,00		
			0.438	11,10	232.00	345,00		
			0.469	11,90	248.00	369,00		
			0.500	12,70	265.00	394,00	XS	
			0.562	14,30	298.00	443,00		
			0.625	15,90	331.00	492,00		
			0.688	17,50	364.00	541,00		
			0.750	19,10	398.00	565,00		
			1.000	25,40	524.00	780,00		
52“	52.000	1320,0	0.312	7,92	172.00	256,00		
			0.344	8,74	190.00	283,00		
			0.375	9,52	207.00	308,00	STD	
			0.406	10,30	224.00	333,00		
			0.438	11,10	241.00	359,00		
			0.469	11,90	258.00	384,00		
			0.500	12,70	276.00	410,00	XS	
			0.562	14,30	310.00	461,00		
			0.625	15,90	345.00	513,00		
			0.688	17,50	378.00	562,00		
			0.750	19,10	412.00	613,00		
			1.000	25,40	545.00	811,00		
56“	56.000	1422.4	0.312	7,92	185.00	276,00		
			0.344	8,74	205.00	305,00		
			0.375	9,52	223.00	332,00	STD	
			0.406	10,30	241.00	359,00		
			0.438	11,10	259.00	386,00		
			0.469	11,90	278.00	414,00		

NB	Outside Diameter		Wall Thickness		Weight		Designation	Schedule
	In.	mm	In.	mm	lb/ft	kg/m	STD/XS/XXS	Nos[1]
56“	56.000	1422,4	0.500	12,70	297.00	442,00	XS	
			0.562	14,30	333.00	496,00		
			0.625	15,90	371.00	552,00		
			0.688	17,50	407.00	606,00		
			0.750	19,10	444.00	661,00		
			1.000	25,40	588.00	875,00		
60”	60.000	1524,0	0.312	7,92	199.00	296,00		
			0.344	8,74	220.00	327,00		
			0.375	9,52	239.00	356,00	STD	
			0.406	10,30	259.00	385,00		
			0.438	11,10	278.00	414,00		
			0.469	11,90	298.00	444,00		
			0.500	12,70	318.00	473,00	XS	
			0.562	14,30	358.00	532,00		
			0.625	15,90	397.00	591,00		
			0.688	17,50	437.00	650,00		
			0.750	19,10	476.00	709,00		
			1.000	25,40	631.00	939,00		
64”	64.000	1625,6	0.312	7,92	212.00	316,00		
			0.344	8,74	234.00	348,00		
			0.375	9,52	255.00	380,00	STD	
			0.406	10,30	276.00	410,00		
			0.438	11,10	297.00	442,00		
			0.469	11,90	319.00	474,00		
			0.500	12,70	339.00	505,00	XS	
			0.562	14,30	382.00	568,00		
			0.625	15,90	424.00	631,00		
			0.688	17,50	466.00	694,00		
			0.750	19,10	509.00	757,00		
			1.000	25,40	674.00	1002,00		
72”	72.000	1828,8	0.375	9,52	287.00	427,00	STD	
			0.406	10,30	310.00	462,00		
			0.438	11,10	335.00	498,00		
			0.469	11,90	358.00	533,00		
			0.500	12,70	382.00	569,00	XS	
			0.562	14,30	430.00	640,00		
			0.625	15,90	478.00	711,00		
			0.688	17,50	526.00	782,00		
			0.750	19,10	573.00	852,00		
			1.000	25,40	759.00	1130,00		
80”	80.000	2032,0	0.375	9,52	319.00	475,00	STD	
			0.406	10,30	345.00	514,00		
			0.438	11,10	372.00	553,00		
			0.469	11,90	398.00	593,00		
			0.500	12,70	425.00	632,00	XS	
			0.562	14,30	478.00	711,00		
			0.625	15,90	532.00	791,00		
			0.688	17,50	585.00	870,00		
			0.750	19,10	637.00	948,00		
			1.000	25,40	845.00	1257,00		
88”	88.000	2235,2	0.469	11,90	439.00	653,00		
			0.500	12,70	468.00	696,00	XS	
			0.562	14,30	526.00	783,00		
			0.625	15,90	585.00	870,00		
			0.688	17,50	643.00	957,00		
			0.750	19,10	702.00	1044,00		
			1.000	25,40	930.00	1384,00		
100“	100.000	2540,0	0.469	11,90	499.00	742,00		
			0.500	12,70	532.00	792,00	XS	
			0.562	14,30	599.00	891,00		
			0.625	15,90	665.00	990,00		
			0.688	17,50	732.00	1090,00		
			0.750	19,10	800.00	1190,00		
			1.000	25,40	1058.00	1575,00		

Steel pipes DIN EN 10220, seamless
(Replaces DIN 2448)

Outside Diameter [mm]	Nominal Wall Thickness [mm]	Weight [kg/m]
10,2	1,6	0,34
13,5	1,8	0,52
16,0	1,8	0,63
17,2	1,8	0,68
20,0	2,0	0,89
21,3	2,0	0,95
25,0	2,0	1,13
26,9	2,3	1,40
30,0	2,6	1,76
31,8	2,6	1,87
33,7	2,6	1,99
38,0	2,6	2,27
42,4	2,6	2,55
44,5	2,6	2,69
48,3	2,6	2,93
51,0	2,6	3,10
57,0	2,9	3,87
60,3	2,9	4,11
63,5	2,9	4,33
70,0	2,9	4,80
76,1	2,9	5,24
82,5	3,2	6,26
88,9	3,2	6,76
101,6	3,6	8,70
108,0	3,6	9,27
114,3	3,6	9,83
127,0	4,0	12,13
133,0	4,0	12,73
139,7	4,0	13,39
152,4	4,5	16,41
159,0	4,5	17,15
168,3	4,5	18,18
177,8	5,0	21,31
196,7	5,4	25,08
219,1	5,9	31,02
244,5	6,3	37,01
273,0	6,3	41,44
323,9	7,1	55,47
355,6	8,0	68,58
406,4	8,8	86,29
457,0	10,0	110,24
508,0	11,0	134,82
559,0	12,5	168,47
610,0	12,5	184,19

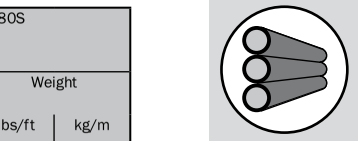
Steel pipes DIN EN 10220, welded
(Replaces DIN 2458)

Outside Diameter [mm]	Nominal Wall Thickness [mm]	Weight [kg/m]
10,2	1,6	0,34
13,5	1,8	0,52
16,0	1,8	0,63
17,2	1,8	0,68
19,0	2,0	0,84
20,0	2,0	0,89
21,3	2,0	0,95
25,0	2,0	1,13
25,4	2,0	1,15
26,9	2,0	1,23
30,0	2,0	1,38
31,8	2,0	1,47
33,7	2,0	1,56
38,0	2,3	2,02
42,4	2,3	2,27
44,5	2,3	2,39
48,3	2,3	2,61
51,0	2,3	2,76
54,0	2,3	2,93
57,0	2,3	3,10
60,3	2,3	3,29
63,5	2,6	3,90
70,0	2,6	4,32
73,0	2,6	4,51
76,1	2,6	4,71
82,5	2,6	5,12
88,9	2,9	6,15
101,6	2,9	7,06
108,0	2,9	7,52
114,3	3,2	8,77
127,0	3,2	9,77
133,0	3,6	11,49
139,7	3,6	12,08
152,4	4,0	14,64
159,0	4,0	15,29
168,3	4,0	16,21
177,8	4,5	19,23
193,7	4,5	21,00
219,1	4,5	23,82
244,5	5,0	29,53
273,0	5,0	33,05
323,9	5,6	43,96
355,6	5,6	48,34
406,4	6,3	62,16
457,0	6,3	70,02
508,0	6,3	77,95
559,0	6,3	85,87
610,0	6,3	93,80

Summary of Scheduled Sizes
(all dimensions in mm)

Nom. Pipe Size	Out-side Dia	SCH 5S	SCH 10S	SCH 10	SCH 20	SCH 30	SCH 40S	Std. Weight	SCH 40	SCH 60	SCH 80S	Extra Strong	SCH 80	SCH 100	SCH 120	SCH 140	SCH 160	Double Extra Strong	Nom. Pipe Size
1/2	21,34	1,65	2,11				2,77	2,77	2,77		3,73	3,73	3,73				4,77	7,47	1/2
3/4	26,67	1,65	2,11	2,11			2,87	2,87	2,87		3,91	3,91	3,91				5,56	7,82	3/4
1	33,40	1,65	2,77	2,77			3,38	3,38	3,38		4,55	4,55	4,55				6,35	9,09	1
1 1/4	42,16	1,65	2,77	2,77			3,56	3,56	3,56		4,85	4,85	4,85				6,35	9,70	1 1/4
1 1/2	48,26	1,65	2,77	2,77			3,68	3,68	3,68		5,08	5,08	5,08				7,14	10,16	1 1/2
2	60,32	1,65	2,77	2,77			3,91	3,91	3,91		5,54	5,54	5,54				8,74	11,07	2
2 1/2	73,02	2,11	3,05	3,05			5,16	5,16	5,16		7,01	7,01	7,01				9,52	14,02	2 1/2
3	88,90	2,11	3,05	3,05			5,49	5,49	5,49		7,62	7,62	7,62				11,12	15,24	3
3 1/2	101,60	2,11	3,05	3,05			5,74	5,74	5,74		8,08	8,08	8,08					16,15	3 1/2
4	114,30	2,11	3,05	3,05			6,02	6,02	6,02		8,56	8,56	8,56		11,12		13,49	17,12	4
5	141,30	2,77	3,40	3,40			6,55	6,55	6,55		9,52	9,52	9,52		12,70		15,87	19,05	5
6	168,27	2,77	3,40				7,11	7,11	7,11		10,97	10,97	10,97		14,27		18,26	21,95	6
8	219,07	2,77	3,76		6,35	7,04	8,18	8,18	8,18	10,31	12,70	12,70	12,70	15,08	18,26	20,63	23,01	22,22	8
10	273,05	3,40	4,19		6,35	7,80	9,27	9,27	9,27	12,70	12,70	12,70	15,08	18,26	21,44	25,40	28,57	25,40	10
12	323,85	3,96	4,57		6,35	8,38	9,52	9,52	10,31	14,27	12,70	12,70	17,47	21,44	25,40	28,57	33,32	25,40	12
14	355,60	3,96	4,77	6,35	7,92	9,52		9,52	11,12	15,09		12,70	19,05	23,82	27,79	31,75	35,71		14
16	406,40	4,19	4,77	6,35	7,92	9,52		9,52	12,70	16,66		12,70	21,44	26,19	30,96	36,53	40,49		16
18	457,20	4,19	4,77	6,35	7,92	11,12		9,52	14,27	19,05		12,70	23,82	29,36	34,92	39,67	45,24		18
20	508,00	4,77	5,54	6,35	9,52	12,70		9,52	15,08	20,62		12,70	26,19	32,54	38,10	44,45	50,01		20
22	558,80	4,77	5,54	6,35	9,52	12,70		9,52	15,87	22,22		12,70	28,57	34,92	41,27	47,62	53,97		22
24	609,60	5,54	6,35	6,35	9,52	14,27		9,52	17,47	24,61		12,70	30,96	38,89	46,02	52,37	59,54		24
26	660,40			7,92	12,70			9,52				12,70							26
28	711,20			7,92	12,70			9,52				12,70							28
30	762,00	6,35	7,92	7,92	12,70	15,87		9,52				12,70							30
32	812,80			7,92	12,70	15,87		9,52	17,47			12,70							32
34	863,60			7,92	12,70	15,87		9,52	17,47			12,70							34
36	914,40			7,92	12,70	15,87		9,52	19,05			12,70							36

Nom. Pipe Size	Out-side Dia	SCH 5S	SCH 10S	SCH 10	SCH 20	SCH 30	SCH 40S	Std. Weight	SCH 40	SCH 60	SCH 80S	Extra Strong	SCH 80	SCH 100	SCH 120	SCH 140	SCH 160	Double Extra Strong	Nom. Pipe Size
1/2	0.840	0.065	0.083				0.109	0.109	0.109		0.147	0.147	0.147				0.188	0.294	1/2
3/4	1.050	0.065	0.083				0.113	0.113	0.113		0.154	0.154	0.154				0.219	0.308	3/4
1	1.315	0.065	0.109				0.133	0.133	0.133		0.179	0.179	0.179				0.250	0.358	1
1 1/4	1.660	0.065	0.109				0.140	0.140	0.140		0.191	0.191	0.191				0.250	0.382	1 1/4
1 1/2	1.900	0.065	0.109				0.145	0.145	0.145		0.200	0.200	0.200				0.281	0.400	1 1/2
2	2.375	0.065	0.109				0.154	0.154	0.154		0.218	0.218	0.218				0.344	0.436	2
2 1/2	2.875	0.083	0.120				0.203	0.203	0.203		0.276	0.276	0.276				0.375	0.552	2 1/2
3	3.500	0.083	0.120				0.216	0.216	0.216		0.300	0.300	0.300				0.438	0.600	3
3 1/2	4.000	0.083	0.120				0.226	0.226	0.226		0.318	0.318	0.318					0.636	3 1/2
4	4.500	0.083	0.120				0.237	0.237	0.237		0.337	0.337	0.337		0.438		0.531	0.674	4
5	5.563	0.109	0.134				0.258	0.258	0.258		0.375	0.375	0.375		0.500		0.625	0.750	5
6	6.625	0.109	0.134				0.280	0.280	0.280		0.432	0.432	0.432		0.562		0.719	0.864	6
8	8.625	0.109	0.148		0.250	0.277	0.322	0.322	0.322	0.406	0.500	0.500	0.500	0.594	0.719	0.812	0.906	0.875	8
10	10.750	0.134	0.165		0.250	0.307	0.365	0.365	0.365	0.500	0.500	0.500	0.594	0.719	0.844	1.000	1.125	1.000	10
12	12.750	0.156	0.180		0.250	0.330	0.375	0.375	0.406	0.562	0.500	0.500	0.688	0.844	1.000	1.125	1.312	1.000	12
14	14.000	0.156	0.188	0.250	0.312	0.375		0.375	0.438	0.594		0.500	0.750	0.938	1.094	1.250	1.406		14
16	16.000	0.165	0.188	0.250	0.312	0.375		0.375	0.500	0.656		0.500	0.844	1.031	1.219	1.438	1.594		16
18	18.000	0.165	0.188	0.250	0.312	0.438		0.375	0.562	0.750		0.500	0.938	1.156	1.375	1.562	1.781		18
20	20.000	0.188	0.218	0.250	0.375	0.500		0.375	0.594	0.812		0.500	1.031	1.281	1.500	1.750	1.969		20
22	22.000	0.188	0.218	0.250	0.375	0.500		0.375	0.625	0.875		0.500	1.125	1.375	1.625	1.875	2.125		22
24	24.000	0.218	0.250	0.250	0.375	0.562		0.375	0.688	0.969		0.500	1.219	1.531	1.812	2.062	2.344		24
26	26.000			0.312	0.500			0.375				0.500							26
28	28.000			0.312	0.500	0.625		0.375				0.500							28
30	30.000	0.250	0.312	0.312	0.500	0.625		0.375				0.500							30
32	32.000			0.312	0.500	0.625		0.375	0.688			0.500							32
34	34.000			0.312	0.500	0.625		0.375	0.688			0.500							34
36	36.000			0.312	0.500	0.625		0.375	0.750			0.500							36



Nominal I.P.S. diameter (inch)	Outside dia		Schedule 5S				Schedule 10S				Schedule 40S				Schedule 80S			
	inch	mm	Wallth.		Weight		Wallth.		Weight		Wallth.		Weight		Wallth.		Weight	
			inch	mm	lbs/ft	kg/m	inch	mm	lbs/ft	kg/m	inch	mm	lbs/ft	kg/m	inch	mm	lbs/ft	kg/m
1/8	0,405	10,3					0,049	1,24	0,1880	0,2798	0,068	1,7	0,2470	0,3676	0,095	2,4	0,3175	0,4725
1/4	0,540	13,7					0,065	1,7	0,3328	0,4953	0,088	2,2	0,4287	0,6380	0,119	3,0	0,5401	0,8038
3/8	0,675	17,1					0,065	1,7	0,4274	0,6361	0,091	2,3	0,5729	0,8526	0,126	3,2	0,7457	1,1097
1/2	0,840	21,3	0,065	1,7	0,5430	0,8081	0,083	2,1	0,6773	1,0079	0,109	2,8	0,8589	1,2782	0,147	3,7	1,098	1,6340
3/4	1,050	26,7	0,065	1,7	0,6902	1,0271	0,083	2,1	0,8652	1,2876	0,113	2,9	1,141	1,6980	0,154	3,9	1,487	2,2129
1	1,315	33,4	0,065	1,7	0,8759	1,3035	0,109	2,8	1,4170	2,1087	0,133	3,4	1,695	2,5225	0,179	4,5	2,192	3,2621
1 1/4	1,660	42,2	0,065	1,7	1,117	1,6623	0,109	2,8	1,8220	2,7115	0,140	3,6	2,294	3,4139	0,191	4,8	3,025	4,5017
1 1/2	1,900	48,3	0,065	1,7	1,286	1,9138	0,109	2,8	2,1040	3,1311	0,145	3,7	2,743	4,0821	0,200	5,1	3,665	5,4541
2	2,375	60,3	0,065	1,7	1,619	2,4093	0,109	2,8	2,6620	3,9615	0,154	3,9	3,687	5,4869	0,218	5,5	5,069	7,5435
2 1/2	2,875	73,0	0,083	2,1	2,498	3,7174	0,120	3,05	3,5640	5,3038	0,203	5,2	5,847	8,7013	0,276	7,0	7,733	11,5080
3	3,500	88,9	0,083	2,1	3,057	4,5493	0,120	3,05	4,3720	6,5063	0,216	5,5	7,647	11,38	0,300	7,6	10,35	15,4025
3 1/2	4,000	101,6	0,083	2,1	3,505	5,2160	0,120	3,05	5,0190	7,4691	0,226	5,7	9,194	13,6822	0,318	8,08	12,62	18,7806
4	4,500	114,3	0,083	2,1	3,952	5,8812	0,120	3,05	5,6660	8,4320	0,237	6,0	10,89	16,2061	0,337	8,6	15,12	22,5011
5	5,563	141,3	0,109	2,8	6,409	9,5376	0,134	3,4	7,8419	11,6702	0,258	6,6	14,75	21,9504	0,375	9,5	20,97	31,2068
6	6,625	168,3	0,109	2,8	7,656	11,3934	0,134	3,4	9,3759	13,9530	0,280	7,1	19,15	28,4983	0,432	11,0	28,84	42,9187
8	8,625	219,1	0,109	2,8	10,010	14,8965	0,148	3,8	13,5199	20,1200	0,322	8,2	28,82	42,8889	0,500	12,7	43,79	65,1667
10	10,750	273,0	0,134	3,4	15,340	22,8285	0,165	4,2	18,8298	28,0221	0,365	9,3	40,86	60,8064	0,500	12,7	55,25	82,2211
12	12,750	323,8	0,156	4,0	21,180	31,5193	0,180	4,6	24,3897	36,2963	0,375	9,5	50,03	74,4529	0,500	12,7	66,03	98,2635
14	14,000	355,6	0,156	4,0	23,280	34,6445	0,188	4,8	27,9897	41,6537								
16	16,000	406,4	0,165	4,2	28,170	41,9216	0,188	4,8	32,0497	47,6957								
18	18,000	457,2	0,165	4,2	31,720	47,2046	0,188	4,8	36,0996	53,7227								
20	20,000	508,0	0,188	4,8	40,150	59,7498	0,218	5,5	46,4896	69,1848								
22	22,000	558,8	0,188	4,8	44,210	65,7917	0,218	5,5	51,1895	76,1791								
24	24,000	609,6	0,218	5,5	55,890	83,1735	0,250	6,4	64,0094	95,2574								
30	30,000	762,0	0,250	6,4	80,180	119,3210	0,312	7,9	99,8490	148,5932								

Conversion Factor For Types 347, 347H, 348, 348H
x 1.014

Conversion Factor For Incoloy 800	x 1.014
Conversion Factor For Incoloy 825	x 1.028
Conversion Factor For Inconel 600	x 1.063
Conversion Factor For Hastelloy B	x 1.168
Conversion Factor For Hastelloy C	x 1.129

Nominal Dimensions of 1/8 to 12“ in Scheduel 5S, 10S, 40S, & 80S are per ASA B 36.19-1965.

Pipe Size Inches	Schedule Number	Diameter Inches OD	Wall Thick-ness	Weight lbs/ft	Weight kg/m	Pipe Size Inches	Schedule Number	Diameter Inches OD	Wall Thick-ness	Weight lbs/ft	Weight kg/m
1/8	40	.405	.068	.085	0,13	4	5	4.500	.083	1.354	2,02
	80	.405	.095	.095	0,16		10	4.500	.120	1.942	2,87
							40	4.500	.237	3.733	5,56
1/4	40	.540	.088	.147	0,22		80	4.500	.337	5.183	7,72
	80	.540	.119	.185	0,28		120	4.500	.438	6.573	9,79
							160	4.500	.531	7.786	11,60
3/8	40	.675	.091	.196	0,29						
	80	.675	.126	.256	0,38	5	5	5.563	.109	2.196	3,27
							10	5.563	.134	2.688	4,00
1/2	5	.840	.065	.186	0,28		40	5.563	.258	5.057	7,53
	10	.840	.083	.232	0,35		80	5.563	.375	7.188	10,71
	40	.840	.109	.294	0,44		120	5.563	.500	9.353	14,20
	80	.840	.147	.376	0,56		160	5.563	.625	11.400	16,98
	160	.840	.188	.453	0,67						
						6	5	6.625	.109	2.624	3,91
3/4	5	1.050	.065	.237	0,35		10	6.625	.134	3.213	4,79
	10	1.050	.083	.297	0,44		40	6.625	.280	6.564	9,78
	40	1.050	.113	.391	0,58		80	6.625	.432	9.884	14,72
	80	1.050	.154	.510	0,76		120	6.625	.562	12.950	19,29
	160	1.050	.219	.672	1,00		160	6.625	.719	15.690	
1	5	1.315	.065	.300	0,45	23.37					
	10	1.315	.109	.486	0,72	8	5	8.625	.109	3.429	5,11
	40	1.315	.133	.581	0,87		10	8.625	.148	4.635	6,90
	80	1.315	.179	.751	1,12		20	8.625	.250	7.735	11,52
	160	1.315	.250	.984	1,47		30	8.625	.277	8.543	12,72
							40	8.625	.322	9.878	14,71
1 1/4	5	1.660	.065	.383	0,57		60	8.625	.406	12.330	18,37
	10	1.660	.109	.625	0,93		80	8.625	.500	15.010	22,36
	40	1.660	.140	.786	1,17		100	8.625	.594	17.620	26,24
	80	1.660	.191	1.037	1,54		120	8.625	.719	21.000	31,28
	160	1.660	.250	1.305	1,94		140	8.625	.812	23.440	34,91
							160	8.625	.906	25.840	38,84
1 1/2	5	1.900	.065	.441	0,66						
	10	1.900	.109	.721	1,07	10	5	10.750	.134	5.256	7,83
	40	1.900	.145	.940	1,40		10	10.750	.165	6.453	9,61
	80	1.900	.200	1.256	1,87		20	10.750	.250	9.698	14,45
	160	1.900	.281	1.681	2,50		30	10.750	.307	11.840	17,64
							40	10.750	.365	14.000	20,85
2	5	2.375	.065	.555	0,83		60	10.750	.500	18.930	28,20
	10	2.375	.109	.913	1,36		80	10.750	.594	22.290	33,20
	40	2.375	.154	1.264	1,88		100	10.750	.719	26.650	39,70
	80	2.375	.218	1.737	2,59						
	160	2.375	.344	2.581	3,84	12	5	12.750	.156	7.258	10,81
							10	12.750	.180	8.359	12,45
2 1/2	5	2.875	.083	.856	1,28		20	12.750	.250	11.550	17,20
	10	2.875	.120	1.221	1,82		30	12.750	.330	15.140	22,55
	40	2.875	.203	2.004	2,98		40	12.750	.406	18.520	27,59
	80	2.875	.276	2.650	3,95		60	12.750	.562	25.310	37,70
	160	2.875	.375	3.464	5,16		80	12.750	.688	30.660	45,67
3	5	3.500	.083	1.048	1,56						
	10	3.500	.120	1.498	2,23						
	40	3.500	.216	2.621	3,90						
	80	3.500	.300	3.547	5,28						
	160	3.500	.438	4.955	7,38						
3 1/2	5	4.000	.083	1.201	1,79						
	10	4.000	.120	1.720	2,56						
	40	4.000	.226	3.151	4,69						
	80	4.000	.318	4.326	6,44						

Material-No. 1.4301, 1.4541, 1.4571 seamless DIN 17456/17458 Tol. acc. DIN 2462

size mm	weight kg/m	size mm	weight kg/m	size mm	weight kg/m
4,00 x 1,00	0,075	2,50	1,409	x 3,00	3,531
5,00 x 1,00	0,100	x 3,00	1,653	x 5,00	5,634
6,00 x 0,50	0,069	x 4,00	2,070	51,00 x 2,00	2,454
x 1,00	0,125	x 5,00	2,504	x 2,60	3,151
x 1,50	0,169	26,90 x 1,60	1,043	54,00 x 2,00	2,604
x 2,00	0,200	x 2,00	1,247	57,00 x 2,60	3,542
8,00 x 0,50	0,094	x 2,65	1,609	x 2,90	3,929
x 1,00	0,175	x 3,20	1,889	60,00 x 5,00	6,886
x 1,50	0,244	28,00 x 1,00	0,767	60,30 x 1,60	2,352
x 2,00	0,300	x 1,50	0,995	x 2,00	2,920
10,00 x 1,00	0,225	x 2,00	1,302	x 2,60	3,757
x 1,50	0,319	x 3,00	1,878	x 2,90	4,168
x 2,00	0,401	30,00 x 1,00	0,726	x 3,20	4,575
x 2,50	0,470	x 1,50	1,070	x 3,65	5,178
12,00 x 1,00	0,275	x 2,00	1,402	x 4,50	6,288
x 1,50	0,394	x 2,60	1,784	70,00 x 2,00	3,405
x 2,00	0,501	x 3,00	2,028	x 2,90	4,878
13,50 x 1,60	0,447	x 4,00	2,604	x 4,00	6,611
x 2,00	0,576	x 5,00	3,130	x 5,00	8,138
x 2,35	0,656	33,70 x 1,60	1,324	76,10 x 2,00	3,711
14,00 x 1,00	0,326	x 2,00	1,588	x 2,60	4,785
x 1,50	0,470	x 2,60	2,025	x 2,90	5,315
x 2,00	0,601	x 2,90	2,237	x 3,65	6,622
x 2,50	0,720	x 3,25	2,478	x 4,00	7,222
x 3,00	0,826	x 3,60	2,713	x 4,50	8,068
15,00 x 1,00	0,351	x 4,05	3,007	x 6,30	11,011
x 1,50	0,507	x 4,50	3,290	80,00 x 5,00	9,390
x 2,00	0,651	35,00 x 1,50	1,258	88,90 x 2,00	4,352
16,00 x 1,00	0,376	x 2,00	1,653	x 2,60	5,618
x 1,50	0,545	x 2,50	2,035	x 2,90	6,245
x 2,00	0,701	x 4,00	3,105	x 3,20	6,867
x 2,50	0,845	38,00 x 1,50	1,371	x 3,60	7,689
x 3,00	0,977	x 2,00	1,803	x 4,05	8,605
17,20 x 1,60	0,625	x 2,60	2,305	x 4,05	9,510
x 2,00	0,761	x 3,00	2,629	x 6,30	13,030
x 2,30	0,874	x 3,60	3,101	x 7,62	15,509
x 2,90	1,038	x 4,00	3,405	90,00 x 5,00	10,642
18,00 x 1,00	0,426	x 5,00	4,132	101,60 x 3,60	8,834
x 1,50	0,620	40,00 x 1,50	1,446	x 4,05	9,893
x 2,00	0,801	x 2,00	1,903	x 5,74	13,778
20,00 x 1,00	0,476	x 2,50	2,348	108,00 x 2,90	7,632
x 1,50	2,695	x 3,00	2,779	x 3,20	8,397
x 2,00	0,901	x 4,00	3,606	x 3,60	9,411
x 2,50	1,096	x 5,00	4,382	x 4,00	10,417
x 3,00	1,377	42,40 x 1,60	1,635	x 5,00	12,836
x 4,00	1,603	x 2,00	2,023	114,30 x 2,60	7,272
x 5,00	1,878	x 2,60	2,591	x 3,05	8,496
21,30 x 1,60	0,789	x 3,25	3,186	x 3,20	8,902
x 2,00	0,967	x 4,05	3,889	x 3,60	9,979
x 2,65	1,238	44,50 x 2,00	2,128	x 4,50	12,372
x 2,90	1,936	x 2,60	2,728	x 6,02	16,322
x 3,20	1,450	x 2,90	3,021	133,00 x 4,00	12,921
22,00 x 1,00	0,526	x 4,00	4,056	139,70 x 4,00	13,592
x 1,50	0,770	48,30 x 1,60	1,871	159,00 x 4,50	17,409
x 2,00	1,002	x 2,00	2,319	168,30 x 5,00	20,445
x 3,00	1,427	x 2,60	2,975	x 7,11	28,690
x 4,00	1,803	x 3,25	3,666	219,10 x 6,30	33,570
25,00 x 1,00	0,601	x 4,05	4,487	x 8,18	43,200
x 1,50	0,883	50,00 x 2,00	2,404	x 12,70	66,020
x 2,00	1,152	x 2,50	2,974		

Material-No. 1.4301, 1.4541, 1.4571 welded

size mm	weight kg/m	size mm	weight kg/m	size mm	weight kg/m	size mm	weight kg/m
6 x 1,00	0,125	33,7 x 1,60	1,286	63,5 x 2,00	3,080	139,7 x 2,00	6,896
8 x 1,00	0,175	x 2,00	1,588	68 x 1,50	2,498	x 2,60	8,926
10 x 1,00	0,225	x 2,60	2,025	69 x 2,00	3,355	x 2,90	9,934
12 x 1,00	0,275	x 3,25	2,478	70 x 2,00	3,405	153 x 1,50	5,690
x 1,50	0,394	35 x 1,50	1,258	x 2,90	4,873	154 x 2,00	7,612
14 x 1,00	0,326	36 x 2,00	1,703	76,1 x 1,60	2,985	159 x 2,00	7,863
15 x 1,00	0,351	38 x 1,50	1,371	x 2,00	3,711	x 2,60	10,182
x 1,50	0,508	x 2,00	1,803	x 2,30	4,250	x 3,00	11,719
16 x 1,00	0,376	x 2,60	2,305	x 2,60	4,785	x 4,00	15,525
x 1,50	0,545	40 x 1,50	1,446	x 2,90	5,315	168,3 x 2,00	8,328
17 x 1,00	0,401	x 2,00	1,903	x 3,65	6,622	x 2,60	10,788
18 x 1,00	0,426	42,4 x 1,60	1,635	83 x 1,50	3,061	x 3,00	12,417
x 1,50	0,620	x 2,00	2,023	84 x 2,00	4,106	x 4,00	16,456
20 x 1,00	0,476	x 2,60	2,591	88,9 x 2,00	4,352	x 5,00	20,445
x 1,50	0,695	x 3,25	3,186	x 2,30	4,987	204 x 2,00	10,116
x 2,00	0,901	43 x 1,50	1,559	x 2,60	5,618	216 x 3,00	16,001
21,3 x 1,60	0,789	44,5 x 2,00	2,128	x 2,90	6,245	219,1 x 2,00	10,872
x 2,00	0,967	x 2,60	2,728	x 3,20	6,867	x 2,60	14,095
x 2,65	1,238	48,3 x 1,60	1,871	101,6 x 2,00	4,988	x 2,90	15,700
22 x 1,50	0,770	x 2,00	2,319	103 x 1,50	3,812	x 4,00	21,544
23 x 1,50	0,808	x 2,60	2,975	104 x 2,00	5,108	x 5,00	26,805
25 x 1,50	0,883	x 3,25	3,666	108 x 2,00	5,308	254 x 2,00	12,620
x 2,00	1,152	50 x 2,00	2,404	x 2,60	6,862	273 x 3,00	20,282
26,9 x 1,60	1,014	51 x 1,50	1,859	x 2,90	7,632	x 4,00	26,943
x 2,00	1,247	x 2,00	2,454	x 4,00	10,417	x 5,00	33,554
x 2,65	1,609	53 x 1,50	1,934	114,3 x 2,00	5,624	304 x 2,00	15,124
28 x 1,50	0,995	54 x 2,00	2,604	x 2,60	7,272	306 x 3,00	22,761
30 x 1,50	1,070	57 x 2,00	2,754	x 2,90	8,089	323,9 x 3,00	24,106
x 2,00	1,402	x 2,60	3,542	x 3,60	9,979	x 4,00	32,041
x 2,60	1,784	x 2,90	3,929	128 x 1,50	4,751	355,6 x 3,00	26,487
32 x 1,50	1,146	60,3 x 1,60	2,352	129 x 2,00	6,360	406,4 x 3,00	30,303
x 2,00	1,502	x 2,00	2,920	133 x 2,00	6,560	508 x 4,00	50,481
33 x 1,50	1,183	x 2,60	3,757	x 2,60	8,490		
		x 2,90	4,168	x 3,00	9,766		
		x 3,65	5,178	x 4,00	12,921		

size mm	weight kg/m	size mm	weight kg/m
18 x 1,00	0,426	40 x 1,50	1,446
22 x 1,00	0,526	52 x 1,00	1,277
x 1,50	0,770	x 1,50	1,897
28 x 1,00	0,676	70 x 2,00	3,405
x 1,50	0,995	85 x 2,00	4,157
34 x 1,00	0,826	104 x 2,00	5,108
x 1,50	1,221	129 x 2,00	6,360
40 x 1,00	0,977	154 x 2,00	7,612

Standard weight

Nominal Size		Outside Diameter		Wall Thickness		Sched.	Weight of plain end pipe	
inch	mm	inch	mm	inch	mm	No.	lb/ft	kg/m
1/8	6	0.405	10,3	0.068	1,73	40	0.24	0,36
1/4	8	0.540	13,7	0.088	2,24	40	0.42	0,63
3/8	10	0.675	17,1	0.091	2,31	40	0.57	0,85
1/2	15	0.840	21,3	0.109	2,77	40	0.85	1,26
3/4	20	1.050	26,7	0.113	2,87	40	1.13	1,68
1	25	1.315	33,4	0.133	3,38	40	1.68	2,50
1 1/4	32	1.660	42,2	0.140	3,56	40	2.27	3,38
1 1/2	40	1.900	48,3	0.145	3,68	40	2.72	4,05
2	50	2.375	60,3	0.154	3,91	40	3.65	5,43
2 1/2	65	2.875	73	0.203	5,16	40	5.79	8,62
3	80	3.500	88,9	0.216	5,49	40	7.58	11,3
3 1/2	(90)	4.000	101,6	0.226	5,74	40	9.11	13,6
4	100	4.500	114,3	0.237	6,02	40	10.79	16,1
5	125	5.563	141,3	0.258	6,55	40	14.62	21,8
6	150	6.625	168,3	0.280	7,11	40	18.97	28,2
8	200	8.625	219,1	0.277	7,04	30	24.70	36,8
8	200	8.625	219,1	0.322	8,18	40	28.55	42,5
10	250	10.750	273	0.279	7,09	–	31.20	46,4
10	250	10.750	273	0.307	7,80	30	34.24	51,0
10	250	10.750	273	0.365	9,27	40	40.48	60,2
12	300	12.750	323,9	0.330	8,38	30	43.77	65,1
12	300	12.750	323,9	0.375	9,52	STD	49.56	73,8
14	350	14.000	355,6	0.375	9,52	30	54.57	81,2
16	400	16.000	406,4	0.375	9,52	30	62.58	93,1

Extra strong (XS)

1/8	6	0.405	10.3	0.095	2,41	80	0.31	0,46
1/4	8	0.540	13.7	0.119	3,02	80	0.54	0,80
3/8	10	0.675	17.1	0.126	3,20	80	0.74	1,10
1/2	15	0.840	21,3	0.147	3,73	80	1.09	1,26
3/4	20	1.050	26,7	0.154	3,91	80	1.47	2,19
1	25	1.315	33,4	0.179	4,55	80	2.17	3,23
1 1/4	32	1.660	42,2	0.191	4,85	80	3.00	4,46
1 1/2	40	1.900	48,3	0.200	5,08	80	3.63	5,40
2	50	2.375	60,3	0.218	5,54	80	5.02	7,47
2 1/2	65	2.875	73	0.276	7,01	80	7.66	11,4
3	80	3.500	88,9	0.300	7,62	80	10.25	15,3
3 1/2	(90)	4.000	101,6	0.318	8,08	80	12.51	18,6
4	100	4.500	114,3	0.337	8,56	80	14.98	22,3
5	125	5.563	141,3	0.375	9,52	80	20.78	30,9
6	150	6.625	168,3	0.432	11,0	80	28.57	42,5
8	200	8.625	219,1	0.500	12,7	80	43.39	64,6
10	250	10.750	273	0.500	12,7	60	54.74	81,5
12	300	12.750	323,9	0.500	12,7	-	65.42	97,4
14	350	14.000	355,6	0.500	12,7	–	72.09	107
16	400	16.000	406,4	0.500	12,7	-	82.77	123

Double extra strong

1/2	15	0.840	21,3	0.294	7,47	-	1.71	2,54
3/4	20	1.050	26,7	0.308	7,82	-	2.44	3,63
1	25	1.315	33,4	0.358	9,09	-	3.66	5,45
1 1/4	32	1.660	42,2	0.382	9,70	-	5.21	7,75
1 1/2	40	1.900	48,3	0.400	10,2	-	6.41	9,54
2	50	2.375	60,3	0.436	11,1	-	9.03	13,4
2	65	2.875	73	0.552	14,0	-	13.70	20,4
3	80	3.500	88,9	0.600	15,2	-	18.58	27,7
4	100	4.500	114,3	0.674	17,1	-	27.54	41,0
5	125	5.563	141,3	0.750	19,1	-	38.55	57,4
6	150	6.625	168,3	0.864	21,9	-	53.16	79,1
8	200	8.625	219,1	0.875	22,2	-	72.42	108

Table 2. Nominal Masses

Kilogrammes per metre

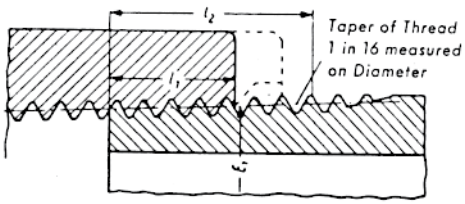
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Nominal	Schedule	Schedule	Schedule	Schedule	Schedule	Schedule	Standard	Schedule	Schedule	Schedule	Extra	Schedule	Schedule	Schedule	Schedule	Schedule	Double
pipe size	5S*	10S*	10	20	30	40S*	wall	40	60	80S*	strong	80	100	120	140	160	extra strong
in																	
1/8	-	0.28	-	-	-	0.36	0.36	0.36	-	0.46	0.46	0.46	-	-	-	-	-
1/4	-	0.49	-	-	-	0.63	0.63	0.63	-	0.80	0.80	0.80	-	-	-	-	-
3/8	-	0.63	-	-	-	0.85	0.85	0.85	-	1.10	1.10	1.10	-	-	-	-	-
1/2	0.80	1.00	-	-	-	1.26	1.26	1.26	-	1.62	1.62	1.62	-	-	-	1.95	2.54+
3/4	1.03	1.28	-	-	-	1.68	1.68	1.68	-	2.19	2.19	2.19	-	-	-	2.89	3.63+
1	1.32	2.08	-	-	-	2.50	2.50	2.50	-	3.23	3.23	3.23	-	-	-	4.23	5.45+
*1 1/4	1.65	2.69	-	-	-	3.38	3.38	3.38	-	4.46	4.46	4.46	-	-	-	5.60	7.75+
*1 1/2	1.90	3.11	-	-	-	4.05	4.05	4.05	-	5.40	5.40	5.40	-	-	-	7.23	9.54+
2	2.40	3.93	-	-	-	5.43	5.43	5.43	-	7.47	7.47	7.47	-	-	-	11.10	13.44+
*2 1/2	3.69	5.25	-	-	-	8.62	8.62	8.62	-	11.40	11.40	11.40	-	-	-	14.90	20.39+
*3	4.51	6.44	-	-	-	11.28	11.28	11.28	-	15.25	15.25	15.25	-	-	-	21.30	27.65
3 1/2	5.18	7.40	-	-	-	13.56	13.56	13.56	-	18.62	18.62	18.62	-	-	-	-	-
4	5.83	8.35	-	-	-	16.06	16.06	15.06	-	22.30	22.30	22.30	-	28.25	-	33.51	40.99+
*5	9.46	11.56	-	-	-	21.76	21.76	21.76	-	30.92	30.92	30.92	-	40.24	-	49.05	57.38+
*6	11.31	13.83	-	-	-	28.23	28.23	28.23	-	42.52	42.52	42.52	-	54.20	-	67.47	79.11+
8	14.78	19.94	-	33.28	36.76	42.49	42.49	42.49	53.07	64.57	64.57	64.57	75.79	90.32	100.89	111.18	107.78+
10	22.67	27.83	-	41.73	50.96	60.24	60.24	60.24	81.46	81.46	81.46	95.84	114.59	132.85	154.97	172.11	154.96
12	33.08	36.01	-	49.68	65.14	73.76	73.76	79.71	108.97	97.36	97.36+	131.81	159.67	186.75	207.87	238.60	186.75
14	34.33	41.27	54.63	67.98	81.21	-	81.21	94.31	127.11	-	107.28+	157.94	194.64	224.36	253.32	281.49	-
16	41.52	47.25	62.58	77.92	93.13	-	93.13	123.18	160.04	-	123.18	203.26	245.34	286.33	332.72	364.35	-
18	46.77	53.23	70.53	87.85	122.12	-	105.05	155.90	205.62	-	139.07+	254.24	309.66	363.33	408.21	459.18	-
20	59.20	68.55	78.47	116.97	154.97	-	116.97	183.14	247.79	-	154.97	310.91	381.20	441.06	507.63	564.24	-
22	65.18	75.48	86.42	128.89	170.86	-	128.89	212.34	293.80	-	170.86	373.27	450.75	526.24	599.76	671.28	-
24	82.42	94.37	94.37	140.81	209.54	-	140.81	254.74	354.62	-	186.75+	441.29	546.84	639.18	719.16	806.74	-
26	-	-	127.58	202.65	-	-	152.73+	-	-	-	202.65	-	-	-	-	-	-
28	-	-	137.52	218.54	271.94	-	164.65+	-	-	-	218.54	-	-	-	-	-	-
30	118.21	147.23	147.45	234.44	291.80	-	176.57+	-	-	-	234.44	-	-	-	-	-	-
32	-	-	157.39	250.33	311.67	-	188.50+	342.17	-	-	250.33	-	-	-	-	-	-
34	-	-	167.32	266.22	331.54	-	200.42+	364.01	-	-	266.22	-	-	-	-	-	-
36	-	-	177.26	282.12	351.41	-	212.34+	420.21	-	-	282.12	-	-	-	-	-	-

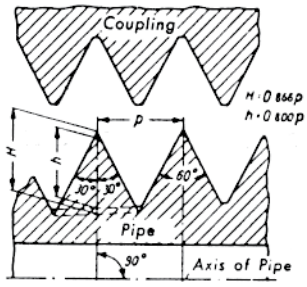
* Schedule 5S, 10S, 40S and 80S* apply to austenitic chromium-nickel steel pipe only.
Due to the variable densities of austenitic stainless steels, these masses are based on carbon steel (see Clause 3), and should be corrected accordingly.
Except where marked + masses of standard, extra strong and double extra strong pipe have pipe of a corresponding mass listed under one of the schedule numbers.

* The use of these sizes should be avoided wherever possible.
* NOTE 1. For masses of threaded pipe with couplings see API Std. 5L.
NOTE 2. For nominal pipe sizes greater than 36 inches see API Std. 5LS.
NOTE 3. For tolerances on masses see appropriate specifications.

EN 10255-M (DIN 2440)				
DN	Nom. Size in inch	OD Ø mm	W.T. s mm	Weigth kg/m
	1/8“	10,2	2,00	0,41
	1/4“	13,5	2,35	0,65
10	3/8“	17,2	2,35	0,84
15	1/2“	21,3	2,65	1,21
20	3/4“	26,9	2,65	1,58
25	1“	33,7	3,25	2,44
32	1 1/4“	42,4	3,25	3,15
40	1 1/2“	48,3	3,25	3,62
50	2“	60,3	3,65	5,10
65	2 1/2“	76,1	3,65	6,51
80	3“	88,9	4,05	8,47
100	4“	114,3	4,50	12,11
125	5“	139,7	4,85	16,19
150	6“	168,3	4,85	21,21

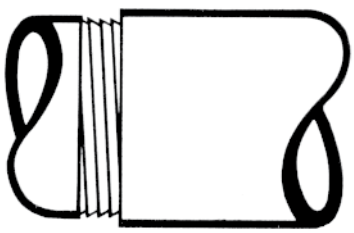
EN 10255-H (DIN 2441)				
DN	Nom. Size in inch	OD Ø mm	W.T. s mm	Weigth kg/m
	1/8“	10,2	2,65	0,50
	1/4“	13,5	2,90	0,77
10	3/8“	17,2	2,90	1,02
15	1/2“	21,3	3,25	1,45
20	3/4“	26,9	3,25	1,90
25	1“	33,7	4,05	2,97
32	1 1/4“	42,4	4,05	3,84
40	1 1/2“	48,3	4,05	4,43
50	2“	60,3	4,50	6,17
65	2 1/2“	76,1	4,50	7,90
80	3“	88,9	4,85	10,10
100	4“	114,3	5,40	14,40
125	5“	139,7	5,40	17,80
150	6“	168,3	5,40	21,20





Nominal Pipe Size	Pitch Diameter at Plane of hand-tight Engagement E1		Pitch of Thread p		Num-ber of Threads per Inch	Depth of Thread max h		Length from End of Pipe to Plane of hand-tight Engagement l_1		Lenght of usefull Thread l_2	
in	in.	mm	in.	mm		in.	mm	in.	mm	in.	mm
1/8	0,37476	9,519	0,03704	0,941	27	0,02963	0,753	0,180	4,572	0,264	6,703
1/4	0,48989	12,443	0,05556	1,411	18	0,04444	1,129	0,200	5,080	0,402	10,206
3/8	0,62701	15,926	0,05556	1,411	18	0,04444	1,129	0,240	6,096	0,408	10,358
1/2	0,77843	19,772	0,07143	1,814	14	0,05714	1,451	0,320	8,128	0,534	13,556
3/4	0,98887	25,117	0,07143	1,814	14	0,05714	1,451	0,339	8,611	0,546	13,861
1	1,23863	31,461	0,08696	2,209	11 1/2	0,06957	1,767	0,400	10,160	0,683	17,343
1 1/4	1,58338	40,218	0,08696	2,209	11 1/2	0,06957	1,767	0,420	10,668	0,707	17,953
1 1/2	1,82234	46,288	0,08696	2,209	11 1/2	0,06957	1,767	0,420	10,668	0,724	18,377
2	2,29627	58,325	0,08696	2,209	11 1/2	0,06957	1,767	0,436	11,074	0,757	19,215
2 1/2	2,76216	70,159	0,12500	3,175	8	0,10000	2,540	0,682	17,323	1,138	28,893
3	3,38850	85,992	0,12500	3,175	8	0,10000	2,540	0,766	19,456	1,200	30,480
3 1/2	3,88881	98,776	0,12500	3,175	8	0,10000	2,540	0,821	20,853	1,250	31,750
4	4,38712	111,433	0,12500	3,175	8	0,10000	2,540	0,844	21,438	1,406	33,020
5	5,44929	138,412	0,12500	3,175	8	0,10000	2,540	0,937	23,800	1,513	35,720
6	6,50597	165,252	0,12500	3,175	8	0,10000	2,540	0,958	24,333	1,713	38,418
8	8,50003	215,901	0,12500	3,175	8	0,10000	2,540	1,063	27,000	1,300	43,498
10	10,62094	269,772	0,12500	3,175	8	0,10000	2,540	1,210	30,734	1,925	48,895
12	12,61781	320,492	0,12500	3,175	8	0,10000	2,540	1,360	34,544	2,125	53,975

E1 = Pitch Diameter at Handtight Plane
h = Height of Thread max. l1 = Length of Normal Handtight Engagement
l2 = Effective Length of Thread



Millimeter Equivalents of Wire and Sheet Metal Gauges

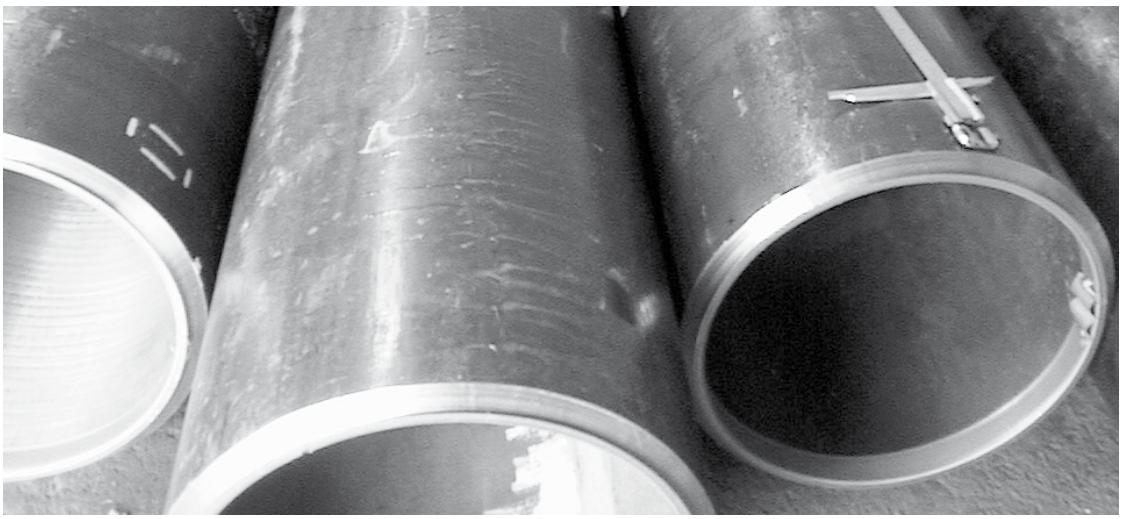
No.	Imperial Standard Wire Gauge I. W. G. S. W. G.	Birmingham Wire Gauge B. W. G.	American Brown & Sharpe Wire Gauge
	mm	mm	mm
7/0	12.700		
6/0	11.786		
5/0	10.973		
4/0	10.160	11.532	11.684
3/0	9.449	10.795	10.414
2/0	8.839	9.652	9.271
1/0	8.230	8.636	8.255
1	7.620	7.620	7.341
2	7.010	7.214	6.553
3	6.401	6.579	5.817
4	5.893	6.045	5.182
5	5.385	5.588	4.623
6	4.877	5.156	4.115
7	4.470	4.572	3.658
8	4.064	4.191	3.251
9	3.658	3.759	2.896
10	3.251	3.404	2.591
11	2.946	3.048	2.311
12	2.642	2.769	2.057
13	2.337	2.413	1.829
14	2.032	2.108	1.626
15	1.829	1.829	1.448
16	1.626	1.651	1.295
17	1.422	1.473	1.143
18	1.219	1.245	1.016
19	1.016	1.067	0.914
20	0.914	0.889	0.813
21	0.813	0.813	0.724
22	0.711	0.711	0.643
23	0.610	0.635	0.574
24	0.559	0.559	0.510
25	0.508	0.508	0.455
26	0.457	0.457	0.404
27	0.417	0.406	0.361
28	0.376	0.356	0.320
29	0.345	0.330	0.287
30	0.315	0.305	0.254

Abmessung			Gewicht
ø - Aussen	ø - Innen	Wandstärke	Kg/m
32,00	16,00	8,00	4,700
	20,00	6,00	3,800
36,00	16,00	10,00	6,400
	20,00	8,00	5,500
	25,00	5,50	4,100
40,00	20,00	10,00	7,400
	25,00	7,50	6,000
	28,00	6,00	5,000
45,00	20,00	12,50	10,000
	28,00	85,00	7,600
	32,00	6,50	6,200
50,00	25,00	12,50	11,600
	32,00	9,00	9,100
	36,00	7,00	7,400
56,00	28,00	14,00	14,500
	36,00	10,00	11,300
	40,00	8,00	9,500
60,00	40,00	10,00	12,300
	44,00	8,00	10,400
63,00	32,00	15,50	18,100
	36,00	13,50	16,500
	40,00	11,50	14,600
	45,00	9,00	12,000
	50,00	6,50	9,100
70,00	50,00	10,00	15,000
71,00	36,00	17,50	23,100
	40,00	15,50	21,200
	45,00	13,00	18,600
	56,00	7,50	11,700
75,00	40,00	17,50	24,800
76,00	58,00	9,00	15,000
80,00	40,00	20,00	29,600
	45,00	17,50	27,000
	50,00	15,00	24,000
	63,00	85,00	15,000
85,00	45,00	20,00	32,000
90,00	50,00	20,00	34,500
	56,00	17,00	30,600
	63,00	13,50	25,500
	71,00	9,50	18,800
95,00	50,00	22,50	40,900
100,00	56,00	22,00	42,300
	63,00	18,50	37,200
	71,00	14,50	30,600
	80,00	10,00	22,200
106,00	56,00	25,00	49,900
	63,00	21,50	44,800
	71,00	17,50	38,200
	80,00	13,00	29,800

Abmessung			Gewicht
ø - Aussen	ø - Innen	Wandstärke	Kg/m
112,00	63,00	24,50	52,800
	71,00	20,50	46,200
	80,00	16,00	37,800
	90,00	11,00	27,400
118,00	63,00	27,50	61,300
	71,00	23,50	54,700
	80,00	19,00	46,300
	90,00	14,00	35,900
125,00	71,00	27,00	65,200
	80,00	22,50	56,800
	90,00	17,50	46,400
	100,00	12,50	34,600
132,00	71,00	30,50	76,300
	80,00	26,00	67,900
	106,00	13,00	38,100
	90,00	21,00	54,400
	106,00	13,00	38,100
140,00	80,00	30,00	81,300
	90,00	25,00	70,800
	100,00	20,00	59,100
	112,00	20,00	43,500
150,00	80,00	20,00	99,200
	95,00	27,50	84,350
	106,00	22,00	69,400
	125,00	12,50	42,300
160,00	112,00	24,00	80,400
	122,00	19,00	67,100
	132,00	14,00	50,500
170,00	106,00	32,00	110,600
	118,00	26,00	92,200
	130,00	20,00	73,900
	140,00	15,00	61,000
180,00	125,00	27,50	103,300
	130,00	25,00	97,000
	150,00	15,00	61,000
190,00	132,00	29,00	115,000
	150,00	20,00	83,800
	160,00	15,00	64,700
200,00	140,00	30,00	127,700
	150,00	25,00	109,600
	160,00	20,00	90,200
212,00	130,00	41,00	175,600
	170,00	21,00	100,500
224,00	140,00	41,00	191,400
	180,00	22,00	111,300
236,00	150,00	43,00	207,800
	190,00	23,00	122,700
250,00	200,00	25,00	140,900

mm sizes

O.D.	Thickness	I.D.	Minimum guaranteed thickness	kg/m.	Centering on O.D.		Centering on I.D.		
					maximum O.D.	minimum I.D.	maximum O.D.	minimum I.D.	
32,00	6,00	20,00	5,7	4,2	31,5	21,6	30,4	20,5	Series 1
36,00	5,5	25,00	5,2	4,5	35,5	26,6	34,4	25,5	
40,00	6,00	28,00	5,7	5,4	39,5	29,6	38,4	28,5	
45,00	6,5	32,00	6,2	6,6	44,5	33,6	43,4	32,5	
50,00	7,00	36,00	6,7	7,9	49,5	37,6	48,4	36,5	
56,00	8,00	40,00	7,6	10,0	55,5	41,9	54,2	40,5	
63,00	6,5	50,00	6,2	9,9	62,00	51,9	61,4	51,00	
71,00	7,5	56,00	7,1	12,7	70,00	58,2	69,1	57,00	
75,00	7,5	60,00	7,1	13,6	74,00	62,3	73,1	61,00	
80,00	8,5	63,00	8,1	16,3	79,00	65,5	77,9	64,00	
85,00	9,00	67,00	8,6	18,3	84,00	69,6	82,8	68,00	
90,00	9,5	71,00	9,0	20,5	89,00	73,8	87,6	72,00	
95,00	10,00	80,00	9,5	22,9	94,00	77,9	92,5	76,00	
100,00	10,00	80,00	9,5	24,2	99,00	83,0	97,4	81,00	
106,00	13,00	90,00	12,4	32,0	105,00	83,4	103,1	81,00	
112,00	11,00	90,00	10,5	30,0	111,00	93,3	109,1	91,00	
118,00	14,00	90,00	13,3	38,8	117,00	93,8	114,8	91,00	
125,00	12,5	100,00	11,9	37,8	124,00	103,8	121,8	101,00	
132,00	13,00	106,00	12,4	41,8	131,00	109,9	128,6	107,00	
140,00	14,00	112,00	13,3	47,5	139,00	116,2	136,4	113,00	
150,00	12,5	125,00	11,9	47,0	149,00	129,3	146,3	126,00	
160,00	14,00	132,00	13,3	55,8	159,00	136,6	156,0	133,00	
170,00	15,00	140,00	14,3	63,4	169,00	144,9	165,7	141,00	
180,00	15,00	150,00	14,3	68,0	179,00	155,1	175,5	151,00	
190,00	15,00	160,00	14,3	72,3	189,00	165,3	185,3	161,00	
200,00	20,00	160,00	19,0	96,8	199,00	166,0	194,8	161,00	
212,00	21,00	170,00	20,0	108,0	211,00	176,3	206,5	171,00	
224,00	22,00	180,00	20,9	120,0	223,00	186,7	218,2	181,00	
236,00	23,00	190,00	21,9	132,2	235,00	197,0	229,9	191,00	
250,00	25,00	200,00	23,8	151,8	249,00	207,5	243,5	201,00	



O.D.	Thickness	I.D.	Minimum guaranteed thickness	kg/m.	Centering on O.D.		Centering on I.D.		
					maximum O.D.	minimum I.D.	maximum O.D.	minimum I.D.	
36,00	8,00	20,00	7,6	5,8	35,5	21,8	34,2	20,5	Series 2
40,00	7,5	25,00	7,1	6,4	39,5	26,8	38,2	25,5	
45,00	8,5	28,00	8,1	8,1	44,5	29,8	43,2	28,5	
50,00	9,00	32,00	8,5	9,6	49,5	34,0	48,0	32,5	
56,00	10,00	36,00	9,4	11,9	55,5	38,3	53,8	36,5	
63,00	11,5	40,00	10,9	15,2	62,00	42,4	61,1	41,00	
71,00	13,00	45,00	12,4	19,5	70,00	47,7	68,8	46,00	
75,00	12,5	50,00	11,9	20,3	74,00	52,8	72,8	51,00	
80,00	15,00	50,00	14,3	25,2	79,00	53,1	77,5	51,00	
85,00	15,00	55,00	14,3	27,2	84,00	58,2	82,4	56,00	
90,00	13,5	63,00	12,8	27,0	89,00	66,2	87,4	64,00	
95,00	14,00	67,00	13,3	29,7	94,00	70,3	92,3	68,00	
100,00	14,5	71,00	13,8	32,4	99,00	74,5	97,1	72,00	
106,00	17,5	71,00	16,6	40,0	105,00	74,9	102,8	72,00	
112,00	16,00	80,00	15,2	40,1	111,00	83,8	108,8	81,00	
118,00	19,00	80,00	18,1	48,9	117,00	84,3	114,5	81,00	
125,00	17,5	90,00	16,6	49,4	124,00	94,3	121,5	91,00	
132,00	21,00	90,00	20,0	60,7	131,00	94,7	128,1	91,00	
140,00	20,00	100,00	19,0	63,0	139,00	104,8	136,0	101,00	
150,00	22,00	106,00	20,9	73,7	149,00	111,2	145,7	107,00	
160,00	24,00	112,00	22,8	85,0	159,00	117,6	155,4	113,00	
170,00	26,00	118,00	24,7	97,8	169,00	124,0	165,0	119,00	
180,00	27,5	125,00	26,1	109,5	179,00	131,4	174,8	126,00	
190,00	29,00	132,00	27,6	121,5	189,00	138,7	184,5	133,00	
200,00	30,00	140,00	28,5	133,1	199,00	147,0	194,2	141,00	
212,00	31,00	150,00	29,5	147,0	211,00	157,3	205,9	151,00	
224,00	32,00	160,00	30,4	161,0	223,00	167,7	217,6	161,00	
236,00	33,00	170,00	31,4	176,0	235,00	178,0	229,3	171,00	
250,00	35,00	180,00	33,3	197,4	249,00	188,5	242,9	181,00	
32,00	8,00	16,00	7,6	5,0	31,5	17,8	30,2	16,5	Series 3
36,00	10,00	16,00	9,5	6,7	35,5	18,0	34,0	16,5	
40,00	10,00	20,00	9,5	7,7	39,5	22,0	38,0	20,5	
45,00	12,5	20,00	11,9	10,4	44,5	22,2	42,8	20,5	
50,00	12,5	25,00	11,9	12,0	49,5	27,2	47,8	25,5	
56,00	14,00	28,00	13,3	15,0	55,5	30,5	53,6	28,5	
63,00	15,5	32,00	14,7	18,7	62,00	34,8	60,8	33,00	
71,00	17,5	36,00	16,6	23,7	70,00	39,2	68,5	37,00	
75,00	17,5	40,00	16,6	25,8	74,00	43,3	72,5	41,00	
80,00	20,00	40,00	19,0	30,6	79,00	43,6	77,2	41,00	
85,00	20,00	45,00	19,0	33,3	84,00	48,7	82,1	46,00	
90,00	20,00	50,00	19,0	35,8	89,00	53,8	87,0	51,00	
95,00	22,5	50,00	21,4	41,6	94,00	54,2	91,8	51,00	
100,00	22,00	56,00	20,9	43,9	99,00	60,2	96,7	57,00	
106,00	25,00	56,00	22,8	51,8	105,00	60,6	102,4	57,00	
112,00	24,5	63,00	23,3	54,9	111,00	67,7	108,3	64,00	
118,00	27,5	63,00	26,1	63,7	117,00	68,1	114,0	64,00	
125,00	27,00	71,00	25,7	67,8	124,00	76,2	120,9	72,00	
132,00	30,5	71,00	29,0	79,1	131,00	76,7	127,5	72,00	
140,00	30,00	80,00	28,5	84,7	139,00	85,8	135,4	81,00	
150,00	35,00	80,00	33,3	102,9	149,00	86,5	144,9	81,00	
160,00	35,00	90,00	33,3	112,0	159,00	96,7	154,7	91,00	
170,00	35,00	100,00	33,3	121,0	169,00	106,9	164,5	101,00	
180,00	40,00	100,00	38,0	143,4	179,00	107,6	174,0	101,00	
190,00	42,00	106,00	39,9	159,0	189,00	114,0	183,7	107,00	
200,00	44,00	112,00	41,8	176,0	199,00	120,4	193,4	113,00	
212,00	43,5	125,00	41,3	188,4	211,00	133,6	205,2	126,00	
224,00	46,00	132,00	43,7	210,5	223,00	141,1	216,8	133,00	
236,00	48,00	140,00	45,6	232,0	235,00	149,5	228,4	141,00	
250,00	50,00	150,00	47,5	257,0	249,00	160,0	242,0	151,00	

Electric Resistance Welded Steel Pipe & Tube
Weight kg/m

OD/ WT	1.2	1.4	1.6	1.8	2.0	2.3	2.4	2.5	2.6	2.8	2.9	3.2	3.5	4.0	4.2	4.5	4.8	5.0	5.5	5.8	6.0
15																					
17.8																					
19	0.527	0.608	0,687	0.763	0.838	0.947	0.982	1.02	1.05	1.12											
21.7	0.607	0.701	0.973	0.883	0.972	1.10	1.14	1.18	1.22	1.31	1.34	1.46									
25.4	0.716	0.829	0.939	1.05	1.15	1.31	1.36	1.41	1.46	1.56	1.61	1.75	1.89	2.11							
26.7	0.765	0.886	0.979	1.09	1.21	1.39	1.44	1.50	1.54	1.65	1.71	1.85	2.00	2.24							
27.2	0.769	0.891	1.01	1.13	1.24	1.41	1.47	1.52	1.58	1.68	1.74	1.89	2.05	2.29							
28.6	0.811	0.939	1.07	1,19	1.31	1.49	1.55	1.61	1.67	1.78	1.84	2.00	2.17	2.43							
31.8	0.906	1.05	1.19	1.33	1.47	1.67	1.74	1.81	1.87	2.00	2.07	2.26	2.44	2.74	2.86	3.03					
34.0	0.971	1.13	1.28	1.43	1.58	1.80	1.87	1.94	2.01	2.15	2.22	2.43	2.63	2.96	3.09	3.27					
36.4	1.05	1.22	1.35	1.52	1.68	1.94	2,01	2,10	2,16	2,32	2,41	2,62	2,82	3,20	3,34	3,54					
38.1	1,09	1,27	1,44	1,61	1,78	2,03	2,11	,19	2,28	2,44	2,52	2,75	2,99	3,36	3,51	3,73	3,94	4,08	4,42	4,62	4,75
42.3	1,23	1,43	1,58	1,78	1,97	2,28	2,36	2,46	2,54	2,73	2,83	3,08	3,33	3,79	3,95	4,19	4,42	4,58	4,99	5,22	5,37
42.7	1,23	1,43	1,62	1,82	2,01	2,29	2,39	2,48	2,57	2,76	2,85	3,12	3,38	3,82	3,99	4,24	4,47	4,65	5,05	5,28	5,43
44.0	1,28	1,49	1,65	1,85	2,05	2,37	2,46	2,57	2,65	2,84	2,95	3,22	3,48	3,96	4,12	4,38	4,62	4,79	5,22	5,46	5,62
45.0	1,30	1,51	1,71	1,92	2,12	2,42	2,52	2,62	2,72	2,91	3,01	,30	3,58	4,04	4,23	4,49	4,74	4,93	5,36	5,61	5,77
48.6	1,40	1,63	1,85	2,08	2,30	2,63	2,73	2,84	2,95	3,16	3,27	3,58	3,89	4,40	4,60	4,89	5,18	5,38	5,85	6,12	6,30
50.8	1,48	1,71	1,94	2,18	2,41	2,75	2,86	2,98	3,09	3,31	3,43	3,76	4,08	4,62	4,83	5,14	5,44	5,65	6,14	6,44	6,63
51.0	1,49	1,73	1,92	2,16	2,41	2,76	2,88	3,00	3,10	3,33	3,44	3,77	4,10	4,64	4,85	5,16	5,45	5,67	6,17	6,46	6,66
54.0	1,58	1,84	2,04	2,29/	2,56	2,93	3,05	3,19	3,30	3,54	3,65	4,01	4,36	4,93	5,16	5,49	5,80	6,04	6,58	6,89	7,10
57.0		1,94	2,19	2,45	2,71	3,10	3,23	3,36	3,49	3,74	3,87	4,25	4,62	5,23	5,47	5,83	6,18	6,41	6,98	7,32	7,55
60.3		2,06	2,31	2,57	2,85	3,29	3,43	3,58	3,70	3,97	4,10	4,51	4,90	5,55	5,81	6,19	6,57	6,82	7,43	7,80	8,03
60.5		2,06	2,32	2,61	2,89	3,30	3,44	3,58	3,71	3,98	4,12	4,52	4,92	5,57	5,83	6,21	6,59	6,84	7,46	7,82	8,06
63.5		2,17	2,41	2,74	3,03	3,47	3,62	3,76	3,90	4,19	4,33	4,76	5,18	5,87	6,14	6,55	6,95	7,21	7,87	8,25	8,51
65.0		2,22	2,47	2,81	3,11	3,56	3,70	3,85	4,00	4,29	4,44	4,88	5,31	6,02	6,30	6,71	7,13	7,40	8,07	8,47	8,73
70.0			2,70	3,03	3,35	3,84	4,00	4,16	4,32	4,64	4,80	5,27	5,74	6,51	6,82	7,27	7,72	8,01	8,75	9,18	9,47
73.0			2,82	3,16	3,47	4,03	4,18	4,37	4,51	4,85	5,01	5,51	6,00	6,81	7,13	7,60	8,04	8,38	9,16	9,61	9,91
75.0			2,90	3,25	3,57	4,14	4,30	4,49	4,64	4,99	5,16	5,67	6,17	7,00	7,33	7,82	8,28	8,63	9,43	9,90	10,2
76.2			2,94	3,30	3,63	4,19	4,37	4,56	4,72	5,07	5,24	5,76	6,27	7,12	7,46	7,96	8,42	8,78	9,59	10,1	10,4
76.3			2,95	3,31	3,66	4,20	4,37	4,55	4,73	5,08	5,25	5,77	6,28	7,13	7,47	7,97	8,46	8,79	9,60	10,1	10,4
82.6			3,20	3,59	3,94	4,57	4,75	4,96	5,13	5,51	5,70	6,27	6,83	7,75	8,12	8,67	9,18	9,57	10,5	11,0	11,3
88.9			3,44	3,87	4,25	4,93	5,12	5,35	5,52	5,95	6,15	6,76	7,37	8,37	8,77	9,37	9,92	10,3	11,3	11,9	12,3
89.1			3,45	3,88	4,30	4,92	5,13	5,34	5,55	5,96	6,16	6,78	7,39	8,39	8,79	9,39	9,98	10,4	11,3	11,9	12,3
101.6					4,91	5,63	5,87	6,11	6,35	6,82	7,06	7,76	8,47	9,63	10,1	10,8	11,5	11,9	13,0	13,7	14,1
114.3					5,54	6,37	6,62	6,89	7,16	7,70	7,97	8,77	9,56	10,9	11,4	12,2	13,0	13,5	14,8	15,5	16,0
127.0					6,16	7,07	7,37	7,68	7,98	8,58	8,86	9,78	10,7	12,1	12,7	13,6	14,4	15,0	16,5	17,3	17,9
139.8					6,80	7,80	8,13	8,46	8,80	9,46	9,79	10,8	11,8	13,4	14,0	15,0	16,0	16,6	18,2	19,2	19,8
141.3					6,87	7,88	8,22	8,53	8,89	9,47	9,80	10,8	11,8	13,4	14,1	15,0	16,0	16,6	18,2	19,2	19,8
152.4					7,42	8,51	8,88	9,24	93,60	10,3	10,7	11,7	12,8	14,6	15,3	16,4	17,4	18,2	19,9	21,0	21,7
165.2					8,05	9,24	9,64	10,0	10,4	11,2	11,6	12,8	14,0	15,9	16,7	17,8	19,0	19,8	21,7	22,8	23,6
168.3					8,20	9,42	9,82	10,2	10,6	11,4	11,8	13,0	14,2	16,2	17,0	18,2	19,4	20,1	22,1	23,2	24,0
177.8					8,67	9,95	10,4	10,8	11,2	12,1	12,5	13,8	15,0	17,1	18,0	19,2	20,5	21,3	23,4	24,6	25,4
190.7										13,0	13,4	14,8	16,2	18,4	19,3	20,7	22,0	22,9	25,1	26,4	27,3
216.3										14,7	15,3	16,8	18,4	20,9	22,0	23,5	25,0	25,9	28,6	30,1	31,1
219.1										14,9	15,5	17,0	18,7	21,2	22,3	23,8	25,4	26,3	29,0	30,5	31,5
244.5													20,8	23,7	24,9	26,6	28,2	29,4	32,4	34,1	35,3
267.4													22,8	26,0	27,3	29,2	31,1	32,2	32,5	37,4	38,7
273.1													23,2	26,5	27,8	29,8	31,6	32,9	36,3	48,2	39,5
318.5														31,0	32,63	34,8	37,1	38,5	42,5	44,7	46,2
323.9														31,6	33,1	35,4	37,8	39,2	43,3	45,5	47,0
339.7														33,1	34,7	37,2	39,6	41,3	45,3	57,8	49,4
355.6																39,0	41,5	43,1	47,6	50,0	51,7
406.4																44,6	47,0	49,5	54,5	57,3	59,2
457.2																50,2	53,5	55,8	61,4	64,6	66,7
508.0																55,9	59,6	62,0	68,2	71,8	74,3
558.8																			75,0	79,1	81,8
609.6																			81,9	86,4	89,3

Weight kg/m

6.2	6.4	6.5	6.6	6.9	7.0	7.5	7.9	8.0	8.5	9.0	9.5	10.0	10.5	11.0	11.5	12.0	12.7	14.3	15.1	16.0	17.5	19.1
4,88	5,00	5307	5,13	5,31	5,37																	
5,52	5,67	5,74	5,81	6,02	6,09																	
5,58	5,73	5,80	5,88	6,09	6,16																	
5,78	5,93	6,01	6,09	6,31	6,39	6,75																
5,93	6,09	6,41	6,25	6,48	6,56	6,94																
6,48	6,66	6,74	6,84	7,10	7,18	7,60																
6,82	7,01	7,10	7,19	7,47	7,56	8,01	8,36	8,44														
6,85	7,04	7,13	7,23	7,50	7,60	8,05	8,40	8,48														
7,31	7,51	7,61	7,71	8,01	8,11	8,60	8,98	9,07	9,5													
7,77	7,99	8,09	8,20	8,52	8,63	9,16	9,32	9,67	10,2													
8,27	8,51	8,62	8,74	9,09	9,20	9,77	10,2	10,3	10,9	11,4												
8,30	8,54	8,66	8,17	9,12	9,24	9,80	10,3	10,4	10,9	11,4												
8,76	9,01	9,14	9,2	9,63	9,75	10,4	10,8	10,9	11,5	12,1												
8,99	9,25	9,38	9,51	9,89	10,0	10,6	11,2	11,2	11,8	12,4												
9,75	10,0	10,2	10,3	10,7	10,9	11,6	12,1	12,2	12,9	13,5	14,2											
10,2	10,5	10,7	10,8	11,2	11,4	12,1	12,7	12,8	13,5	14,2	14,9											
10,5	10,8	11,0	11,1	11,6	11,7	12,8	13,1	13,2	13,9	14,6	15,3	16,0										
10,7	11,0	11,2	11,3	11,8	11,9	12,7	13,3	13,5	14,2	14,9	15,6	16,3										
10,7	11,0	11,2	11,3	11,8	12,0	12,7	13,3	13,5	14,2	14,9	15,6	16,3										
11,7	12,0	12,2	12,4	12,9	13,1	13,8	14,6	14,7	15,5	16,3	17,1	17,9										
12,6	13,0	13,2	13,4	14,0	14,1	15,0	15,8	16,0	16,9	17,7	18,6	19,5	20,3	21,1	21,9							
12,7	13,1	13,2	13,4	14,0	14,2	15,0	15,8	16,0	16,9	17,8	18,6	19,5	20,4	21,2	22,0							
14,6	15,0	15,2	15,5	16,1	16,3	17,4	18,3	18,5	19,6	20,6	21,6	22,6	23,6	24,6	25,6							
16,5	17,0	17,3	17,5	18,3	18,5	19,7	20,7	21,0	22,2	23,4	24,6	25,7	26,9	28,0	29,2	30,3	31,8					
18,5	19,0	19,3	19,6	20,4	20,7	22,1	23,2	23,5	24,8	26,2	27,5	28,9	30,2	31,5	32,8	34,0	35,8					
20,4	21,1	21,1	21,7	22,6	22,9	24,4	25,7	26,0	27,5	29,0	30,5	32,0	33,5	34,9	36,4	37,8	39,8					
21,3	21,1	21,4	21,7	22,6	23,0	24,5	25,7	26,6	27,8	29,1	30,6	32,4	33,9	35,3	36,8	38,3	40,3					
22,4	23,3	23,4	23,7	24,8	25,1	26,8	28,2	28,5	30,2	31,8	33,5	35,1	35,4	38,4	40,0	41,5	43,8					
24,3	25,1	25,4	25,8	26,9	27,3	29,1	30,6	31,0	32,8	34,7	36,5	38,3	40,1	41,8	43,6	45,3	47,8					
24,8	25,6	25,9	26,3	27,5	27,8	29,7	31,2	31,6	33,5	35,4	37,2	39,0	40,9	42,7	44,5	46,3	48,7					
26,2	27,1	27,5	27,9	29,1	29,5	31,5	33,1	33,5	35,5	37,5	39,4	41,4	43,3	45,2	47,2	49,1	51,7					
28,2	29,1	29,5	30,0	31,3	31,7	33,9	35,6	36,0	38,1	40,3	42,4	44,6	46,7	48,7	50,8	52,9	55,7	62,2				
32,1	33,1	33,6	34,1	35,6	36,1	38,6	40,6	41,1	43,6	46,0	48,4	50,9	53,3	55,7	58,1	60,5	63,7	71,2	74,9			
32,6	33,6	34,1	34,6	36,1	366,6	39,1	41,1	41,6	44,1	46,6	49,1	51,6	54,0	56,4	58,9	61,3	64,6	72,2	76,0			
36,4	37,6	38,1	38,7	40,4	41,0	43,8	46,1	46,7	49,5	52,3	55,1	57,8	60,6	63,3	66,1	68,8	70,9	81,2	85,4			
39,9	41,2	41,8	42,4	44,3	45,0	48,0	50,6	51,2	54,3	57,3	604	63,5	66,5	69,6	72,6	75,6	79,8	89,3	93,9	99,2		
40,8	42,1	42,7	43,4	45,3	45,9	49,1	51,7	52,3	55,5	58,6	61,7	64,9	68,0	71,1	74,2	77,3	81,5	91,3	91,3	101		
47,7	49,3	50,0	50,8	53,0	53,8	57,5	60,5	61,3	65,0	68,7	72,4	76,1	79,8	83,4	87,1	90,7	95,8	107	113	119	130	
48,6	50,1	50,9	51,6	53,9	54,7	58,5	61,6	62,3	66,1	69,9	73,7	77,4	81,1	84,9	88,6	92,3	97,5	109	115	121	132	
51,0	52,6	53,4	54,2	56,6	57,4	61,4	64,4	65,4	69,4	73,4	77,4	81,3	85,2	89,2	93,1	97,0	102	115	121	128	139	
53,4	55,1	55,8	56,8	59,3	60,2	64,3	67,7	68,6	72,8	76,9	81,1	85,2	89,4	93,5	97,6	102	107	120	127	134	146	158
61,2	63,1	63,9	65,1	68,0	69,0	73,7	77,6	78,4	83,4	88,2	93,0	97,8	103	107	112	117	123	138	146	154	168	182
69,0	71,1	72,1	73,3	76,6	77,8	83,1	87,5	88,4	94,1	99,5	105	110	116	121	126	132	139	156	165	174	190	206
76,7	79,2	80,4	81,6	85,3	86,5	92,6	97,4	98,6	105	111	117	123	129	135	141	147	155	174	184	194	212	230
84,5	87,2	88,5	89,9	93,9	95,3	102	107	109	115	122	129	135	142	149	155	162	171	192	202	214	234	
92,3	95,2	96,7	98,1	103	104	111	117	119	126	133	141	148	155	162	170	177	187	210	221	234		

Large Diameter Arc Welded Steel Pipe
Weight kg/m

Nominal O.D.		Diameter (mm)		Wall Thickness																
A	B	O.D.	I.D.	6.0	6.4	7.0	7.9	8.0	9.0	9.5	10.0	11.0	12.0	12.7	13.0	14.0	15.0	16.0	17	18
	16	400.0		58.3	62.2	67.8	76.4	77.3	86.8	91.5	96.2	106	115	121						
400		406.4		59.2	63.1	66.9	77.6	78.6	88.2	93.5	97.8	107	117	123	126	135	145	154	163	172
450	18	457.2		66.8	71.1	77.7	87.5	88.6	99.5	105	110	121	132	139	142	153	164	174	185	195
		500		73.1	77.9	85.1	95.9	97.1	109	115	121	133	144	153	156	168	179	191	202	211
500	20	508.0		74.3	79.2	86.5	97.4	98.6	111	117	123	135	147	155	159	171	182	194	206	218
			500	74.9	79.9	87.5	98.9	100	113	119	126	139	152	161	164	177	190	204	217	230
550	22	558.8		81.8	87.2	95.3	107	109	122	129	135	149	162	171	175	188	201	214	227	240
		600		87.9	93.7	102	115	117	131	138	145	160	174	184	188	202	216	230	244	258
600	24	609.6		89.3	95.2	104	117	119	133	141	148	162	177	187	191	206	220	234	248	263
			600	89.7	95.7	105	118	120	135	143	150	166	181	192	197	212	227	243	258	274
650	26	660.4		96.8	103	113	127	129	145	152	160	176	192	203	207	223	239	254	270	285
		700		103	109	120	135	137	153	161	170	17	204	215	220	237	253	270	286	303
700	28	711.2		104	111	12	137	139	156	164	173	196	207	219	224	241	258	274	291	308
			700	104	111	122	138	140	157	166	175	193	211	223	229	247	264	283	301	319
750	30	762.0		112	119	130	147	149	167	176	185	204	222	235	240	258	276	294	312	330
		800		117	125	137	155	156	176	185	195	214	233	247	22	271	290	309	328	347
800	32	812.8		119	127	139	157	159	178	188	198	217	237	251	256	276	295	314	334	353
			800	119	127	139	157	159	180	190	200	220	240	255	261	281	301	322	343	363
850	34	863.6		127	135	148	167	169	190	200	210	231	252	266	273	293	314	334	355	375
900	36	914.4		134	143	154	177	179	201	212	223	245	267	282	289	311	333	354	376	398
			900	134	143	157	177	179	202	213	224	247	270	286	293	316	338	361	384	407
	38	965.2		142	151	165	181	189	212	224	236	259	282	298	305	328	351	375	398	420
1000	40	1016.0		149	159	174	196	199	223	236	248	273	297	314	322	346	370	395	419	443
			1000	149	159	174	196	199	224	236	249	274	299	317	325	350	375	401	426	452
	42	1066.8		157	167	183	206	209	235	248	261	286	312	330	338	363	389	415	440	466
1000	44	1117.6		164	175	192	216	219	246	260	273	300	327	346	354	381	408	435	461	488
			1100	164	175	191	216	219	246	260	274	301	329	348	357	385	4512	440	468	496
	46	1168.4		177	183	200	226	229	257	271	286	314	342	362	370	399	427	455	483	511
1200	48	1219.2				209	236	239	269	283	298	328	357	378	387	416	445	475	504	533
			1200			208	235	238	268	283	298	328	359	380	389	469	449	480	510	541
1350	50	1371.6				236	266	269	302	319	336	369	402	426	436	469	502	535	568	601
			1350			234	265	268	302	318	335	369	403	427	437	471	505	539	573	607
1500	60	1524.0						299	336	355	373	410	447	473	454	521	558	595	632	668
			1500					297	335	354	372	410	447	474	485	523	560	598	636	674
1600	64	1625.6							359	379	398	438	477	505	517	556	596	635	674	714
			1600						357	377	397	437	477	505	517	557	597	638	678	718
1800	72	1828.8							404	426	449	493	538	569	582	627	671	715	760	804
			1800						401	424	446	491	536	568	581	626	671	717	762	807
			2000									546	595	630	645	696	745	795	846	896
			2100									573	625	662	677	730	782	835	887	940
			2200										655	693	709	764	819	874	929	985
			2300										684	724	742	799	856	914	971	1029
			2400											756	774	833	893	953	1013	103
			2500											787	806	868	930	993	1055	1118
			2600											818	838	902	967	1032	1097	1162
			2700													937	1004	1072	1139	1206
			2800													972	1041	1111	1181	1251
			2900													1006	1078	1151	1223	1295
			3000													1041	1115	1190	1265	1340

19	20	21	22	23	24	25	26	27	28	29	30	32	34	36	38	40	42	44	46	48	50
182																					
205	216	226	236	246	256	266	276	286	296	306	316	336	355								
225	237	248	259	271	282	293	304	315	326	337	348	369	391								
229	241	252	264	275	286	298	309	320	331	343	354	376	397	419	440						
243	256	268	283	297	310	324	337	352	365	378	392	420	448	476	504						
253	266	278	291	304	317	329	342	354	366	379	391	416	440	464	488	512					
272	286	300	314	327	341	354	368	382	395	408	422	448	475	501	527	552					
277	291	305	319	333	347	360	374	388	402	415	429	456	483	509	536	562	588	614			
290	305	321	337	353	369	385	401	417	434	450	466	499	532	565	598	631	665	669			
301	316	331	346	362	377	392	407	422	437	452	466	496	525	554	583	612	640	669	697		
319	335	352	368	384	400	416	432	448	464	480	489	527	560	589	620	651	682	712	742		
324	341	357	374	390	407	43	439	456	472	488	504	536	568	599	631	662	693	724	755	785	815
337	355	373	392	410	428	447	465	484	503	521	540	578	615	653	692	730	769	807	846	885	925
348	366	384	401	419	437	454	472	489	507	524	542	576	610	645	678	712	746	779	812	845	878
366	385	403	422	441	459	478	496	515	533	551	570	609	642	678	714	750	785	820	855	890	925
372	391	410	429	448	467	486	504	523	542	561	579	616	653	690	726	762	798	834	870	905	991
384	404	425	446	467	488	509	530	551	572	593	614	657	699	742	785	829	872	916	960	1004	1148
396	416	436	457	477	497	517	537	557	577	597	617	656	696	735	774	812	851	889	927	965	1003
420	441	463	484	506	527	548	570	591	612	633	654	696	738	780	821	862	904	944	985	1026	1066
431	454	477	500	524	547	570	594	617	641	644	688	735	783	831	879	927	976	1024	1073	1122	1171
443	466	489	512	534	557	580	602	625	641	670	691	736	781	825	869	913	956	1000	1147	1199	1128
467	491	515	539	563	587	611	635	658	682	706	729	776	823	870	916	963	1009	1055	1100	1146	1191
477	503	529	554	580	606	632	658	684	710	736	762	814	867	920	973	1026	1079	1133	1187	1241	1295
491	516	542	567	593	617	642	667	692	717	742	767	817	866	915	964	1013	1061	1110	1158	1206	1254
515	541	568	594	621	647	674	700	726	752	779	805	857	909	960	1012	1063	1114	1165	1216	1266	1316
524	552	580	609	637	665	694	722	750	779	807	836	893	951	1008	1066	1124	1183	1241	1300	1359	1418
539	566	594	622	650	677	705	732	760	787	815	842	897	951	1005	1059	1113	1167	1220	1273	1326	1379
562	591	620	650	678	707	736	765	794	822	851	880	937	994	1050	1107	1163	1219	1275	1331	1386	1442
571	602	3632	663	694	724	755	786	817	848	879	910	972	1035	1097	1161	1223	1286	1350	1413	1477	1541
634	667	699	732	765	798	830	862	895	928	960	993	1057	1121	1186	1250	1313	1377	1440	1504	1567	1630
641	676	710	744	779	813	848	882	917	951	986	1021	1091	1160	1230	1301	1371	1442	1513	1584	1655	1726
702	741	778	815	851	888	924	960	997	1033	1069	1105	1178	1249	1321	1393	1464	1535	1606	1677	1747	1817
712	750	788	826	864	902	940	678	1017	1055	1093	1132	1209	1286	1364	1441	1519					
753	792	831	870	909	948	987	1026	1064	1103	1142	1180	1258	1334	1411	1488	1564					
759	799	839	880	921	961	1002	1043	1083	1124	1165	1206	1288	1370	1452	1535	1618					
848	892	936	980	1024	1068	1112	1156	1200	1253	1287	1331	1418	1505	1592	1678	1764					
852	898	943	988	1034	1080	1125	1171	1216	1262	1308	1354	1446	1538	1630	1722	1815					
946	996	1047	1097	1147	1198	1248	1299	1350	1400	1451	1502	1603	1705	1807	1910	2012	2115				
993	1046	1098	1151	1204	1257	1310	1363	1416	1469	1523	1576	1682	1789	1896	2003	2111	2219				
1040	1095	1150	1205	1261	1316	1372	1427	1483	1538	1594	1650	1761	1873	1985	2097	2210	2322				
1087	1144	1202	1260	1318	1375	1433	1491	1549	1607	1666	1724	1840	1957	2074	2191	2308	2426				
1133	1194	1254	1314	1374	1435	1495	1555	1616	1676	1737	1798	1919	2041	2163	2285	2407	2529				
1180	1243	1306	1368	1431	1494	1557	1620	1683	1746	1809	1872	1998	2125	2251	2378	2505	2633				
1227	1292	1357	1422	1488	1553	1618	1684	1749	1815	1880	1946	2077	2208	2340	2472	2604	2736				
1274	1342	1409	1477	1544	1612	1680	1748	1816	1884	1952	2020	2156	2292	2429	2566	2703	2840	2977			
1321	1391	1460	1531	1601	1671	1742	1812	1882	1953	2023	2094	2235	2376	2518	2659	2801	2944	3086			
1368	1440	1513	1582	1658	1731	1803	1876	149	2022	2095	2168	2314	2460	2606	2753	200	3047	3194			
1415	1489	1564	1639	1715	1790	1865	1940	2015	2091	2166	2242	2393	2544	2695	847	2999	3151	3303			

ISO Metric Sizes
Square Hollow Sections

Outside b mm	Wall-thickness s mm	Mass kg/m
30	2,0 3,0 4,0 5,0 6,0	1,76 2,47 3,27 3,93 4,52
40	2,9 3,2 4,0 5,0 6,3 7,1 8,0	3,31 3,61 4,39 5,28 6,33 6,91 8,04
50	3,2 4,0 5,0 6,3 7,1 8,0 10,0	4,62 5,64 6,85 8,31 9,14 10,00 12,60
55	3,0 4,0 5,0 6,0 8,0 10,0	4,90 6,41 7,85 9,23 11,80 14,10
60	3,2 4,0 5,0 6,3 7,1 8,0 10,0 12,5	5,62 6,90 8,42 10,30 11,40 12,50 14,90 17,30
65	3,0 4,0 5,0 6,0 8,0 10,0	5,84 7,66 9,42 11,10 14,30 17,30
70	3,2 4,0 5,0 6,3 7,1 8,0 10,0 12,5	6,63 8,15 9,99 12,30 13,60 15,00 18,00 21,30
80	3,6 4,0 5,0 6,3 7,1 8,0 10,0 11,0 12,5	8,53 9,41 11,60 14,20 15,80 17,50 21,10 22,80 25,20
90	3,6 4,0 5,0 6,3 7,1 8,0 10,0 12,5	9,66 10,70 13,10 16,20 18,10 20,10 24,30 29,10
100	3,0 4,0 5,0 6,3 7,1 8,0 10,0 11,0 12,5 14,2	9,14 11,90 14,70 18,20 20,30 22,60 27,40 29,70 33,00 36,60
110	4,0 5,0 6,3 7,1 8,0 10,0 11,0 12,5 14,2	13,20 16,30 20,20 22,50 25,10 30,60 34,20 37,00 41,00
120	3,0 4,0 5,0 6,3 7,1 8,0 10,0 11,5 12,5 14,2	11,00 14,40 17,80 22,20 24,10 27,60 33,70 36,60 40,90 45,50
130	5,0 6,3 7,1 8,0 10,0 11,0 12,5 14,2 16,0	19,40 24,10 27,00 30,10 36,80 40,10 44,80 49,90 55,10
140	4,0 5,0 6,3 7,1 8,0 10,0 11,0 12,5 14,2 16,0	17,10 21,00 26,10 29,20 36,60 40,00 43,50 48,70 54,40 60,10
150	4,0 5,0 6,3 8,0 10,0 11,0 12,5 14,2 16,0	17,90 22,60 28,10 35,10 43,10 47,00 52,70 58,90 65,20
160	5,0 6,3 8,0 10,0 12,5 14,2 16,0	23,70 30,10 37,60 46,30 56,60 63,30 70,20
180	5,0 6,3 8,0 10,0 12,5 14,2 16,0	26,90 34,00 42,70 52,50 64,40 72,20 80,20
200	4,0 5,0 6,3 8,0 10,0 12,5 14,2 16,0	24,60 30,00 38,00 47,70 58,80 72,30 81,10 90,30
220	5,0 6,3 8,0 10,0 12,5 14,2 16,0	33,10 41,90 52,70 65,10 80,10 90,10 100,00
250	5,0 6,3 8,0 10,0 12,5 14,2 16,0	37,90 47,90 60,30 74,50 91,90 103,00 115,00
260	6,3 8,0 10,0 12,5 14,2 16,0	49,90 62,80 77,70 95,80 108,00 120,00
300	6,3 8,0 10,0 12,5 14,2 16,0	57,80 72,80 90,20 112,00 126,00 141,00
320	6,3 7,1 8,0 10,0 12,5 14,2 16,0	61,90 69,60 78,10 97,00 120,00 136,00 152,00
350	6,3 8,0 10,0 12,5 14,2 16,0	67,70 85,40 106,00 131,00 148,00 166,00
360	6,3 7,1 8,0 10,0 12,5 14,2 16,0	69,80 78,50 88,20 110,00 136,00 153,00 172,00
400	6,3 8,0 10,0 12,5 14,2 16,0 20,0	77,50 67,90 122,00 151,00 170,00 191,00 235,00

ISO Metric Sizes
Rectangular Hollow Sections

Outside	Wall-thickness	Mass
b x h mm	s mm	kg/m
50 x 30	3,2	3,61
	4,0	4,39
	5,0	5,28
	6,3	6,33
	7,1	6,91
60 x 40	3,2	4,62
	4,0	5,64
	5,0	6,85
	6,3	8,31
	7,1	9,14
	8,0	10,00
	9,0	11,60
70 x 40	3,2	5,12
	4,0	6,27
	5,0	7,64
	6,3	9,30
	7,1	10,30
	8,0	11,30
	8,8	12,10
	10,0	13,30
70 x 50	3,2	5,62
	4,0	6,90
	5,0	8,42
	6,3	10,30
	7,1	11,40
	8,0	12,50
	8,8	13,50
	10,0	14,90
	12,5	17,30
80 x 40	3,2	5,62
	4,0	6,90
	5,0	8,42
	6,3	10,30
	7,1	11,40
	8,0	12,50
	8,8	13,50
	10,0	14,90
	12,5	17,30
80 x 50	3,2	6,12
	4,0	7,53
	5,0	9,21
	6,3	11,30
	7,1	12,50
	8,0	13,80
	8,8	14,90
	10,0	16,40
	12,5	19,30
80 x 60	3,2	6,63
	4,0	8,15
	5,0	9,99
	6,3	12,30
	7,1	13,60
	8,0	15,00
	8,8	16,30
	10,0	18,00
	12,5	21,30
90 x 50	3,2	6,63
	4,0	8,15
	5,0	9,99
	6,3	12,30
	7,1	13,60
	8,0	15,00
	8,8	16,30
	10,0	18,00
	12,5	21,30
90 x 70	3,0	7,25
	4,0	9,55
	5,0	11,80
	6,0	13,90
	8,0	18,10
	10,0	22,00
100 x 40	3,0	6,31
	4,0	8,29
	5,0	10,20
	6,0	12,10
	8,0	15,60
	10,0	18,80
100 x 50	3,0	6,71
	4,0	8,78
	5,0	10,80
	6,3	13,30
	8,0	16,30
	8,8	17,60

Outside	Wall-thickness	Mass
b x h mm	s mm	kg/m
100 x 60	3,0	7,18
	4,0	9,41
	5,0	11,60
	6,3	14,20
	8,0	17,50
	8,8	19,00
	10,0	21,10
	12,5	25,20
100 x 80	3,0	8,20
	4,0	10,70
	5,0	13,10
	6,3	16,20
	7,1	18,10
	8,0	20,10
	8,8	21,80
	10,0	24,30
	12,5	29,10
120 x 50	3,0	7,72
	4,0	10,20
	5,0	12,60
	6,0	14,90
	8,0	19,30
	10,0	23,60
120 x 60	3,0	8,20
	4,0	10,70
	5,0	13,10
	6,3	16,20
	7,1	18,10
	8,0	20,10
	8,8	21,80
	10,0	24,30
	12,5	29,10
120 x 80	3,0	9,14
	4,0	11,90
	5,0	14,70
	6,3	18,20
	7,1	20,30
	8,0	22,60
	8,8	24,50
	10,0	27,40
	12,5	33,00
	14,2	36,60
120 x 100	3,0	10,10
	4,0	13,30
	5,0	16,50
	6,0	19,60
	8,0	25,60
	10,0	31,40
	12,0	36,90
140 x 60	3,0	9,14
	4,0	12,10
	5,0	14,90
	6,0	17,70
	8,0	23,10
	10,0	28,30
140 x 70	3,0	9,61
	4,0	12,60
	5,0	15,50
	6,3	19,20
	7,1	21,40
	8,0	23,80
	8,8	25,90
	10,0	29,00
	12,5	35,00
	14,2	38,80
140 x 80	3,0	10,10
	4,0	13,20
	5,0	16,30
	6,3	20,20
	7,1	22,50
	8,0	25,10
	8,8	27,30
	10,0	30,60
	12,5	37,00
	14,2	41,00
150 x 50	3,0	9,14
	4,0	11,90
	5,0	14,70
	6,3	18,20
	7,1	20,30
	8,0	23,10
	10,0	28,30

Outside	Wall-thickness	Mass
b mm	s mm	kg/m
150 x 60	3,0	9,61
	4,0	12,70
	5,0	15,70
	6,0	18,70
	8,0	24,40
	10,0	29,80
150 x 75	3,0	10,30
	4,0	13,60
	5,0	16,90
	6,0	20,10
	7,0	23,20
	8,0	26,30
	10,0	32,20
	12,0	37,90
150 x 100	3,0	11,50
	4,0	15,10
	5,0	18,60
	6,3	23,10
	7,1	25,90
	8,0	28,90
	8,8	31,50
	10,0	35,30
	12,5	42,80
	14,2	47,70
	16,0	52,60
160 x 80	3,0	11,00
	4,0	14,40
	5,0	17,80
	6,3	22,20
	7,1	24,70
	8,0	27,60
	8,8	30,10
	10,0	33,70
	12,5	40,90
	14,2	45,50
	16,0	50,10
160 x 90	3,0	11,50
	4,0	15,10
	5,0	18,60
	7,1	25,90
	8,0	28,90
	8,8	31,50
	10,0	35,30
	12,5	42,80
	14,2	47,70
	16,0	52,60
180 x 60	5,0	17,80
	6,3	22,20
	7,1	24,70
	8,0	28,10
	10,0	34,50
	12,0	40,70
180 x 80	3,0	12,00
	4,0	15,80
	5,0	19,40
	6,3	24,10
	7,1	27,00
	8,0	30,10
	8,8	32,80
	10,0	36,80
	12,5	44,80
	14,2	49,90
	16,0	55,10
180 x 90	4,0	16,50
	5,0	20,40
	6,0	24,30
	8,0	31,90
	10,0	39,30
	12,0	46,30
200 x 150	5,0	26,10
	6,3	33,00
	8,0	41,40
	10,0	51,00
	12,5	62,50
	14,2	70,00
	16,0	77,70
200 x 180	6,0	33,80
	8,0	44,20
	10,0	54,10
	12,0	63,60

Outside	Wall-thickness	Mass
b mm	s mm	kg/m
220 x 80	4,0	17,90
	5,0	22,20
	6,0	26,30
	8,0	34,10
	10,0	41,50
220 x 100	5,0	23,70
	6,0	28,10
	8,0	36,60
	10,0	44,70
220 x 120	5,0	25,30
	6,3	32,00
	8,0	40,20
	10,0	49,90
	12,5	60,50
	14,2	67,80
	16,0	75,20
220 x 140	5,0	26,90
	6,0	31,90
	8,0	41,70
	10,0	51,00
	12,0	59,80
180 x 100	4,0	16,90
	5,0	21,00
	6,3	26,10
	7,1	29,20
	8,0	32,60
	8,8	35,60
	10,0	40,00
	12,5	48,70
	14,2	54,40
	16,0	60,10
180 x 120	4,0	17,90
	5,0	22,20
	6,0	26,30
	8,0	34,10
	10,0	41,50
180 x 140	5,0	23,70
	6,0	28,10
	8,0	36,60
	10,0	44,70
200 x 100	4,0	17,90
	5,0	22,60
	6,3	28,10
	8,0	35,10
	10,0	43,10
	12,5	52,70
	14,2	58,90
	16,0	65,20
200 x 120	5,0	23,70
	6,3	30,10
	8,0	37,60
	10,0	46,30
	12,5	56,60
	14,2	63,30
	16,0	70,20
220 x 180	5,0	30,00
	6,0	35,70
	8,0	46,70
	10,0	57,20
	12,0	67,30
250 x 50	4,0	17,90
	5,0	22,20
	6,0	26,30
	8,0	34,10
250 x 100	4,0	21,40
	5,0	26,10
	6,3	33,00
	8,0	41,40
	10,0	51,00
	12,5	62,50
	14,2	70,00
	16,0	77,70
250 x 150	4,0	24,60
	5,0	30,00
	6,3	38,00
	8,0	47,70
	10,0	58,80
	12,5	72,30
	14,2	81,10
	16,0	90,30

Outside	Wall-thickness	Mass
b mm	s mm	kg/m
260 x 140	4,0	24,60
	5,0	30,00
	6,3	38,00
	8,0	47,70
260 x 140	10,0	58,80
	12,5	72,30
	14,2	81,10
	16,0	90,30
260 x 180	5,0	33,10
	6,3	41,90
	8,0	52,70
	10,0	65,10
	12,5	80,10
	14,2	90,10
	16,0	100,00
300 x 100	4,0	24,60
	5,0	30,00
	6,3	38,00
	8,0	47,70
	10,0	58,80
	12,5	72,30
	14,2	81,10
	16,0	90,30
300 x 150	4,0	27,70
	5,0	33,90
	6,3	43,10
	8,0	54,00
	10,0	66,70
	12,5	82,10
300 x 200	4,0	30,80
	5,0	37,90
	6,3	47,90
	8,0	60,30
	10,0	74,50
	12,5	91,90
	14,2	103,00
	16,0	115,00
350 x 100	5,0	33,90
	6,0	40,40
	8,0	53,00
	10,0	65,10
	12,0	76,80
350 x 150	5,0	37,90
	6,0	45,10
	8,0	59,20
	10,0	72,90
	12,0	86,20
350 x 250	6,3	57,80
	8,0	72,80
	10,0	90,20
	12,5	112,00
	14,2	126,00
	16,0	141,00
400 x 100	5,0	37,90
	6,0	45,10
	8,0	59,20
	10,0	72,90
	12,3	86,20
400 x 200	6,3	57,80
	8,0	72,80
	10,0	90,20
	12,5	112,00
	14,2	126,00
	16,0	141,00
400 x 250	6,3	62,90
	8,0	79,40
	10,0	98,50
	12,5	122,00
	14,2	138,00
	16,0	154,00
400 x 300	6,3	67,70
	8,0	85,40
	10,0	106,00
	12,5	131,00
	14,2	148,00
	16,0	166,00

Condenser & Heat Exchanger Tubes
Carbon Alloy Steel

WT / OD	SWG M/W mm	SWG A/W mm	BWG M/W mm	BWG A/W mm	SWG M/W mm	SWG A/W mm	BWG M/W mm	BWG A/W mm	SWG M/W mm	SWG A/W mm	BWG M/W mm	BWG A/W mm	SWG M/W mm	SWG A/W mm	BWG M/W mm	BWG A/W mm	SWG M/W mm	SWG A/W mm	BWG M/W mm
	25,00 0,508	25,00 0,508	25,00 0,507	25,00 0,507	23,00 0,610	23,00 0,610	23,00 0,634	23,00 0,634	22,00 0,711	22,00 0,711	22,00 0,711	22,00 0,711	21,00 0,813	21,00 0,813	21,00 0,812	21,00 0,812	20,00 0,914	20,00 0,914	20,00 0,889
3/16“ 4.76 mm	0,058	0,053	0,058	0,053	0,068	0,062	0,075	0,065	0,077	0,071	0,077	0,071	0,086	0,079	0,086	0,079	0,094	0,087	0,092
1/4“ 6.35 mm	0,080	0,073	0,080	0,073	0,095	0,086	0,098	0,089	0,108	0,099	0,108	0,099	0,121	0,111	0,121	0,111	0,133	0,123	0,131
3/8“ 9.53 mm	0,125	0,113	0,125	0,113	0,148	0,134	0,153	0,139	0,170	0,155	0,170	0,155	0,192	0,175	0,192	0,175	0,213	0,194	0,208
1/2“ 12.7mm	0,169	0,153	0,169	0,152	0,201	0,182	0,208	0,189	0,232	0,210	0,232	0,210	0,262	0,238	0,262	0,238	0,292	0,266	0,285
5/8“ 15,88 mm																0,372	0,337	0,362	
3/4“ 19,05 mm																0,451	0,409	0,440	
7/8“ 22,2 mm																			
1“ 25.4 mm																			
1 1/16“ 26,99 mm																			
1 1/8“ 28,58 mm																			
1 1/4“ 31.75 mm																			
1 1/2“ 38,1 mm																			
1 3/4“ 44.45 mm																			
2“ 50.8 mm																			
2 1/4“ 57.15 mm																			
2 1/2“ 63.5 mm																			
2 3/4“ 69.85 mm																			
3“ 76,2 mm																			

WT / OD	SWG M/W mm	SWG A/W mm	BWG M/W mm	BWG A/W mm	SWG M/W mm	SWG A/W mm	BWG M/W mm	BWG A/W mm	SWG M/W mm	SWG A/W mm	BWG M/W mm	BWG A/W mm	SWG M/W mm	SWG A/W mm	BWG M/W mm	BWG A/W mm	SWG M/W mm	SWG A/W mm	BWG M/W mm
	13,00 2,337	13,00 2,337	13,00 2,413	13,00 2,413	12,00 2,642	12,00 2,642	12,00 2,768	12,00 2,768	11,00 2,947	11,00 2,947	11,00 3,048	11,00 3,048	10,00 3,251	10,00 3,251	10,00 3,403	10,00 3,403	9,00 3,658	9,00 3,658	9,00 3,760
1/2“ 12,7 mm	0,647	0,597	0,662	0,612	0,706	0,655	0,729	0,678											
5/8“ 15,88 mm	0,850	0,780	0,872	0,801	0,936	0,862	0,970	0,895											
3/4“ 19,05 mm	1,053	0,962	1,082	0,990	1,165	1,069	1,210	1,111											
7/8“ 22,2 mm	1,255	1,146	1,290	1,179	1,394	1,276	1,450	1,328	1,523	1,401	1,523	1,441	1,657	1,521		1,579			
1“ 25,4 mm	1,459	1,329	1,502	1,368	1,624	1,483	1,691	1,545	1,780	1,632	1,835	1,680	1,940	1,776	2,014	1,846	2,137	1,961	
1 1/16“ 26,99 mm	1,561	1,421	1,607	1,463	1,742	1,586	1,814	1,654	1,915	1,747	1,972	1,800	2,083	1,903	2,165	1,980	2,298	2,105	
1 1/8“ 28,58 mm	1,660	1,512	1,710	1,557	1,854	1,690	1,933	1,763	2,041	1,862	2,101	1,919	2,223	2,030	2,310	2,112	2,455	2,248	
1 1/4“ 31,75 mm	1,865	1,695	1,921	1,764	2,082	1,897	2,171	1,979	2,290	2,093	2,365	2,157	2,505	2,285	2,607	2,379	2,772	2,534	2,836
1 1/2“ 38,1 mm	2,268	2,061	2,341	2,124	2,541	2,310	2,656	2,412	2,801	2,555	2,894	2,635	3,071	2,794	3,199	2,912	3,408	3,107	3,489
1 3/4“ 44,45 mm	2,676	2,427	2,759	2,502	3,003	2,724	3,137	2,845	3,311	3,015	3,423	3,112	3,636	3,303	3,791	3,445	4,044	3,680	4,142
2“ 50,8 mm	3,084	2,793	3,180	2,879	3,461	3,138	3,619	3,279	3,822	3,478	3,953	3,589	4,201	3,812	4,380	3,978	4,680	4,253	4,795
2 1/4“ 57,15 mm	3,490	3,159	3,596	3,256	3,920	3,551	4,098	3,712	4,332	3,939	4,482	4,066	4,765	4,321	4,975	4,510	4,332	3,939	5,450
2 1/2“ 63,5 mm	3,896	3,525	4,020	3,635	4,379	3,965	4,582	4,146	4,843	4,401	5,011	4,544	5,332	4,830	5,567	5,044	5,951	5,398	6,101
2“ 50.8 mm	4,302	3,891	4,436	4,013	4,838	4,379	5,060	4,580	5,353	4,862	5,541	5,021	5,897	5,339	6,159	5,576	6,587	5,971	6,757
2 3/4“ 69,85 mm	4,708	4,257	4,859	4,391	5,297	4,792	5,545	5,013	5,864	5,323	6,070	5,499	6,462	5,848	6,751	6,109	7,223	6,544	7,411
3“ 76,2 mm	5,115	4,623	5,278	4,768	5,757	5,206	6,023	5,446	6,394	5,785	6,599	5,976	7,027	6,356	7,343	6,642	7,858	7,116	8,064
3 1/4“ 82,55 mm	5,521	4,989	5,698	5,145	6,216	5,620	6,504	5,879	6,885	6,246	7,129	6,453	7,593	6,866	7,935	7,175	8,494	7,689	8,713
3 1/2“ 95,25 mm					6,675	6,034	6,985	6,313	7,395	6,708	7,657	6,930	8,158	7,375	8,526	7,708	9,130	8,262	9,370
4“ 101,6 mm																			

Principal Inch and SWG-BWG Sizes and their mm Equivalents

SWG A/W mm	SWG M/W mm	BWG A/W mm	BWG M/W mm	SWG A/W mm	SWG M/W mm	BWG A/W mm	BWG M/W mm	SWG A/W mm	SWG M/W mm	BWG A/W mm	BWG M/W mm	SWG A/W mm	SWG M/W mm	BWG A/W mm	BWG M/W mm	SWG A/W mm	SWG M/W mm	BWG A/W mm	WT / OD
19 1,016	19 1,086	19 1,086	18 1,219	18 1,219	18 1,244	18 1,244	16 1,626	16 1,626	16 1,651	16 1,651	15 1,829	15 1,829	15 1,828	15 1,828	14 2,032	14 2,032	14 2,108	14 2,108	
0,094	0,106	0,089																	3/16“ 4.76 mm
0,134	0,153	0,141	0,167	0,154	0,169	0,157	0,202	0,189	0,204	0,191	0,216	0,204	0,216	0,204					1/4“ 6.35 mm
0,213	0,247	0,226	0,273	0,250	0,278	0,254	0,344	0,317	0,348	0,321	0,375	0,347	0,375	0,347					3/8“ 9.53 mm
0,293	0,342	0,311	0,379	0,345	0,385	0,351	0,485	0,444	0,491	0,450	0,534	0,490	0,534	0,490	0,581	0,536	0,599	0,551	1/2“ 12.7mm
0,372	0,436	0,396	0,485	0,441	0,494	0,449	0,626	0,572	0,635	0,579	0,693	0,634	0,693	0,633	0,758	0,694	0,781	0,716	5/8“ 15,88 mm
0,452	0,530	0,481	0,590	0,536	0,601	0,545	0,766	0,698	0,779	0,709	0,852	0,777	0,852	0,777	0,936	0,853	0,964	0,881	3/4“ 19,05 mm
			0,696	0,631	0,709	0,643	0,909	0,826	0,919	0,836	1,010	0,919	1,009	0,918	1,112	1,012	1,147	1,045	7/8“ 22,2 mm
			0,802	0,726	0,817	0,714	1,048	0,953	1,068	0,970	1,170	1,063	1,169	1,063	1,290	1,171	1,331	1,211	1“ 25.4 mm
							1,121	1,017	1,137	1,032	1,251	1,135	1,250	1,134	1,377	1,251	1,424	1,294	1 1/16“ 26,99 mm
							1,193	1,081	1,210	1,097	1,331	1,207	1,329	1,206	1,466	1,330	1,514	1,376	1 1/8“ 28,58 mm
							1,333	1,208	1,350	1,225	1,487	1,349	1,487	1,349	1,644	1,489	1,697	1,541	1 1/4“ 31.75 mm
							1,615	1,462	1,637	1,483	1,805	1,636	1,805	1,636	1,998	1,807	2,064	1,871	1 1/2“ 38,1 mm
															2,351	2,126	2,430	2,201	1 3/4“ 44.45 mm
															2,704	2,444	2,796	2,531	2“ 50.8 mm
															3,054	2,762	3,163	2,861	2 1/4“ 57.15 mm
															3,407	3,080	3,529	3,192	2 1/2“ 63.5 mm
															3,761	3,399	3,896	3,522	2 3/4“ 69.85 mm
															4,121	3,716	4,262	3,852	3“ 76,2 mm

SWG A/W mm	SWG M/W mm	BWG A/W mm	BWG M/W mm	SWG A/W mm	SWG M/W mm	BWG A/W mm	WT / OD
8 40,64	8 4,191	8 4,191	7 4,471	7 4,471	7 4,572	7 4,572	
							1/2“ 12,7 mm
							5/8“ 15,88 mm
							3/4“ 19,05 mm
							7/8“ 22,2 mm
2,137		2,192					1“ 25,4 mm
							1 1/16“ 26,99 mm
							1 1/8“ 28,58 mm
2,775	3,108	2,848					1 1/4“ 31,75 mm
3,411	3,836	3,505	4,055	3,708	4,133	3,780	1 1/2“ 38,1 mm
4,047	4,564	4,161	4,833	4,408	4,928	4,496	1 3/4“ 44,45 mm
4,684	5,292	4,817	5,610	5,108	5,717	5,212	2“ 50,8 mm
5,320	6,022	5,473	6,387	5,808	6,517	5,928	2 1/4“ 57,15 mm
5,957	6,751	6,130	7,164	6,508	7,312	6,644	2 1/2“ 63,5 mm
6,593	7,479	6,786	7,941	7,208	8,106	7,36	2“ 50.8 mm
7,229	8,208	7,442	8,718	7,908	8,901	8,076	2 3/4“ 69,85 mm
7,866	8,933	8,098	9,496	8,608	9,696	8,792	3“ 76,2 mm
8,502	9,661	8,755	10,273	9,308	10,491	9,508	3 1/4“ 82,55 mm
9,138	10,393	9,411	11,050	10,009	11,285	10,223	3 1/2“ 95,25 mm
9,775	11,122	10,066	11,827	10,709	12,080	10,939	4“ 101,6 mm

Weights in kg/m

Conversion Factors	Carbon Steel	
Aluminium Brass (Alloy 687)	x	1.057
Admiralty Brass (Alloy 443)	x	1.082
Cu/Ni 90/10 (Alloy 706)	x	1.133
Cu/Ni 70/30 (Alloy 715)	x	1.133
Stainless steel	x	1.015
UNS N04400	x	1.125
UNS N06600	x	1.073
UNS N08800	x	1.013
UNS N08810	x	1.013
UNS N08825	x	1.037
UNS N0N10665	x	1.174
UNS N0N06455	x	1.131

M/W minimum wall • A/W average wall

Non-Ferrous Heat Exchanger Tubes
Weights & Dimensions for the most popular sizes

Size		Material Cu/Ni 90/10 - Cu/Ni 70/30		Material Aluminium Brass		Material Admiraltry Brass	
		Min. Wall	Aver. Wall	Min. Wall	Aver. Wall	Min. Wall	Aver. Wall
3/4“ x	12 BWG	1,338	1,280	1,248	1,194	1,275	1,217
	12 SWG	1,287	1,231	1,201	1,149	1,227	1,170
	13 BWG	1,192	1,140	1,112	1,064	1,136	1,084
	13 SWG	1,160	1,109	1,082	1,035	1,105	1,055
	14 BWG	1,060	1,014	0,989	0,946	1,011	0,964
	14 SWG	1,027	0,982	0,958	0,916	0,978	0,934
	15 BWG	0,935	0,894	0,872	0,834	0,891	0,850
	15 SWG	0,935	0,894	0,872	0,835	0,891	0,850
	16 BWG	0,853	0,816	0,796	0,761	0,813	0,776
	16 SWG	0,841	0,805	0,785	0,751	0,802	0,765
	18 BWG	0,658	0,629	0,614	0,587	0,627	0,598
	18 SWG	0,645	0,617	0,602	0,576	0,615	0,587
	19 BWG	0,579	0,554	0,540	0,517	0,552	0,527
	19 SWG	0,544	0,520	0,507	0,485	0,519	0,495
	20 BWG	0,479	0,458	0,447	0,428	0,457	0,436
	20 SWG	0,492	0,471	0,459	0,439	0,469	0,448
1” x	10 BWG	2,223	2,126	2,074	1,984	2,118	2,021
	10 SWG	2,138	2,045	1,995	1,908	2,038	1,944
	11 BWG	2,023	1,935	1,887	1,805	1,928	1,839
	11 SWG	1,965	1,879	1,833	1,753	1,873	1,787
	12 BWG	1,860	1,779	1,735	1,660	1,773	1,691
	12 SWG	1,785	1,708	1,666	1,593	1,702	1,623
	13 BWG	1,647	1,575	1,536	1,470	1,570	1,498
	13 SWG	1,601	1,531	1,493	1,428	1,525	1,455
	14 BWG	1,458	1,394	1,360	1,301	1,390	1,326
	14 SWG	1,410	1,349	1,315	1,258	1,344	1,282
	15 BWG	1,280	1,224	1,194	1,142	1,219	1,163
	15 SWG	1,280	1,224	1,194	1,142	1,220	1,164
	16 BWG	1,165	1,114	1,086	1,039	1,110	1,059
	16 SWG	1,148	1,098	1,071	1,024	1,094	1,044
	18 BWG	0,892	0,853	0,832	0,796	0,850	0,811
	18 SWG	0,875	0,837	0,817	0,781	0,834	0,796
	19 BWG	0,784	0,750	0,731	0,700	0,747	0,713
	19 SWG	0,736	0,704	0,686	0,657	0,701	0,669
	20 BWG	0,647	0,619	0,604	0,577	0,617	0,588
	20 SWG	0,665	0,636	0,620	0,593	0,633	0,604
10 x	1 mm	0,267	0,256	0,249	0,239	0,255	0,243
12 x	1 mm	0,327	0,312	0,305	0,292	0,311	0,297
12 x	1,5 mm	0,468	0,447	0,436	0,417	0,446	0,425
14 x	1 mm	0,386	0,369	0,360	0,345	0,368	0,351
14 x	1,5 mm	0,557	0,533	0,519	0,497	0,531	0,506
16 x	1 mm	0,446	0,426	0,416	0,398	0,425	0,405
16 x	1,5 mm	0,646	0,618	0,602	0,576	0,616	0,587
18 x	1 mm	0,505	0,483	0,471	0,451	0,481	0,459
18 x	1,5 mm	0,735	0,703	0,686	0,656	0,700	0,668
20 x	2 mm	1,069	1,022	0,997	0,954	1,019	0,972
20 x	2,5 mm	1,299	1,243	1,212	1,159	1,238	1,181
22 x	2 mm	1,188	1,136	1,108	1,060	1,132	1,080
22 x	2,5 mm	1,448	1,385	1,350	1,292	1,380	1,316
25 x	2 mm	1,366	1,306	1,274	1,219	1,302	1,242
25 x	2,5 mm	1,671	1,598	1,558	1,491	1,592	1,519

Weight Factors (Cu/Ni + Brass) (Steel = 0.02466) Av

		min.		
1. Aluminium Brass	(Al 687)	0,0262009	0,0265	0,0275
2. Admiralty Brass	(Al 443)	0,0267978	0,0270	0,0281
3. Cu/Ni	(Al 706)	0,0280859	0,0284	0,0295
4. Cu/Ni	(Al 715)	0,0280859	0,0284	0,0295

Weight formula: [O.D. (mm) - W.T. (mm)] x W.T. (mm) x weight factor = kg/meter

x-marked items are always available ex Stock

Tube OD	Thickness	ASTM A179	ST 35,8 DIN 17175	A199 T11	ASTM 1 A213/ A199 T5	ASTM A 214	ASTM-A213				ASTM-B111				Tube OD in mm	Thickness in mm
							TP304L	TP316L	TP321	TP316Ti	AL687	AL443	AL706[3]	AL715[4]		
1/2"	16 BWG	x	x								x				12,70	1,65
5/8"	18 BWG	x	x								x	x		x	15,88	1,245
5/8"	16 BWG	x	x		x	x					x	x		x	15,88	1,65
3/4"	18 BWG	x	x								x	x	x	x	19,05	1,245
3/4"	16 SWG	x	x	x	x		x	x	x		x	x	x		19,05	1,63
3/4"	16 BWG	x	x	x	x		x	x	x		x	x	x	x	19,05	1,65
3/4"	14 SWG	x	x	x	x		x	x	x		x	x	x		19,05	2,03
3/4"	14 BWG	x	x	x	x	x	x	x	x		x	x	x	x	19,05	2,11
3/4"	12 SWG	x	x	x	x						x	x			19,05	2,642
3/4"	12 BWG	x	x	x	x						x	x			19,05	2,77
3/4"	10 BWG	x	x												19,05	3,403
1"	16 BWG	x	x					x			x	x			25,40	1,65
1"	14 SWG	x	x	x	x	x	x	x			x	x	x	x	25,40	2,03
1"	14 BWG	x	x	x	x	x	x	x			x	x	x	x	25,40	2,11
1"	13 BWG	x	x			x									25,40	2,41
1"	12 SWG	x	x	x	x	x		x			x	x	x	x	25,40	2,642
1"	12 BWG	x	x	x	x	x		x			x	x	x	x	25,40	2,77
1"	11 BWG	x	x			x									25,40	3,048
1"	10 SWG	x	x		x										25,40	3,25
1"	10 BWG	x	x		x										25,40	3,403
1"	9 BWG	x	x												25,40	3,76
1 1/4"	12 BWG	x	x		x										31,75	2,77
1 1/4"	10 BWG	x	x		x										31,75	3,403
1 1/2"	10 BWG	x	x		x										38,10	3,403
20mm²	2,0mm	x	x						x	x					20,00	2,00
25mm²	2,0mm	x	x				x	x	x	x					25,00	2,00
25mm²	2,5mm	x	x												25,00	2,50

[1]Heat-treatment: Isothermal annealed [2]Average Wallthickness [3]CuNi 90/10 [4]CuNi70/30

- Certified acc. to ASTM/ASME/EN/DIN/NFA
- Other sizes than mentioned above are shortly available from stock or individual quick new production.

Standard weight

NOMINALE NPS Design.		OUTSIDE DIAMETER (inch)	(mm)	NOMINAL WALL THICKNESS AND WEIGHTS SCH 5S (inch)	(mm)	(kg/m)	SCH. 10S (inch)	(mm)	(kg/m)	SCH. 40S (inch)	(mm)	(kg/m)	SCH.80S (inch)	(mm)	(kg/m)
DN 15	1/2“	0,840	21,34	0,065	1,65	0,4603	0,083	2,11	0,5749	0,1091	2,77	0,7288	0,1469	3,73	0,9307
DN 20	3/4“	1,050	26,67	0,065	1,65	0,5849	0,083	2,11	0,7342	0,113	2,87	0,9678	0,1539	3,91	1,2609
DN 25	1“	1,315	33,4	0,065	1,65	0,7423	0,109	2,77	1,2021	0,1331	3,38	1,4377	0,179	4,55	1,8599
DN 32	1-1/4“	1,660	42,16	0,065	1,65	0,947	0,109	2,77	1,5459	0,1402	3,56	1,947	0,1909	4,85	2,5639
DN 40	1-1/2“	1,900	48,26	0,065	1,65	1,0897	0,109	2,77	1,7853	0,1449	3,68	2,3244	0,2	5,08	3,1079
DN 50	2“	2,375	60,32	0,065	1,65	1,3716	0,109	2,77	2,2587	0,1539	3,91	3,1251	0,2181	5,54	4,2999
DN 65	2-1/2“	2,87	73,02	0,083	2,11	2,1199	0,120	3,05	3,0237	0,2031	5,16	4,9612	0,276	7,01	6,5562
DN 80	3“	3,500	88,9	0,083	2,11	2,5946	0,120	3,05	3,7099	0,2161	5,49	6,4881	0,3	7,62	8,7754
DN 90	3-1/2“	4,000	101,6	0,083	2,11	2,9743	0,120	3,05	4,2588	0,226	5,74	7,7961	0,3181	8,08	10,706
DN 100	4“	4,500	114,3	0,083	2,11	3,354	0,120	3,05	4,8076	0,237	6,02	9,2357	0,337	8,56	12,824
DN 125	5“	5,563	141,3	0,109	2,77	5,4369	0,134	3,4	6,6431	0,2579	6,55	12,505	0,3752	9,53	17,792
DN 150	6“	6,625	168,27	0,109	2,77	6,4954	0,134	3,4	7,9423	0,2799	7,11	16,235	0,4319	10,97	24,449
DN 200	8“	8,625	219,07	0,109	2,77	8,4891	0,148	3,76	11,47	0,322	8,18	24,442	0,5	12,7	37,134
DN 250	10“	10,750	273,05	0,134	3,4	12,99	0,165	4,19	15,961	0,365	9,27	34,646	0,5	12,7	46,848
DN 300	12“	12,750	323,85	0,156	3,96	17,948	0,180	4,57	20,674	0,3752	9,53	42,442	0,5	12,7	55,989
DN 350	14“	14,000	355,6	0,156	3,96	19,73	0,188	4,78	23,76	X	X	X	X	X	X
DN 400	16“	16,000	406,4	0,165	4,19	23,878	0,188	4,78	27,2	X	X	X	X	X	X
DN 450	18“	18,000	457,2	0,165	4,19	26,894	0,188	4,78	30,641	X	X	X	X	X	X
DN 500	20“	20,000	508	0,188	4,78	34,081	0,218	5,54	39,44	X	X	X	X	X	X
DN 550	22“	22,000	558,8	0,188	4,78	37,521	0,218	5,54	43,428	X	X	X	X	X	X
DN 600	24“	24,000	609,6	0,218	5,54	47,415	0,250	6,35	54,275	X	X	X	X	X	X

Seamless and Welded Titanium Tubes for Heat Exchanger
acc. ASTM B 338

OUTSIDE DIAMETER		BWG, NOMINAL WALL THICKNESS (inch; mm) AND WEIGHTS (Kg/m)															
		BWG 25		BWG 24		BWG 23		BWG 22		BWG 20		BWG 19		BWG 18		BWG 16		BWG 14	
(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)
		0,02	0,508	0,022	0,558	0,025	0,635	0,028	0,711	0,035	0,889	0,042	1,066	0,049	1,244	0,065	1,651	0,083	2,108
3/8“	9,525	0,065		0,071		0,080		0,089		0,109		0,128		-		-		-	
1/2“	12,7	0,088		0,096		0,109		0,121		0,149		0,176		0,202		-		-	
5/8“	15,875	0,111		0,121		0,137		0,153		0,189		0,224		0,258		0,333		-	
3/4“	19,05	0,133		0,146		0,166		0,185		0,229		0,272		0,314		0,407		0,506	
7/8“	22,225	0,156		0,171		0,194		0,217		0,269		0,320		0,370		0,481		0,601	
1“	25,4	0,179		0,196		0,223		0,249		0,309		0,368		0,426		0,556		0,696	
1-1/4“	31,75	0,225		0,247		0,280		0,313		0,389		0,463		0,538		0,704		0,885	
1-1/2“	38,1	0,271		0,297		0,337		0,377		0,469		0,559		0,650		0,853		1,075	
1-3/4“	44,45	0,316		0,347		0,394		0,441		0,549		0,655		0,762		1,001		1,265	
2“	50,8	0,362		0,397		0,451		0,505		0,629		0,751		0,873		1,150		1,454	

FOR MINIMUM WALL PLEASE ADD 10 %

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Weights for Precision Steel Tubes
kg/m

Wall mm	Outside diameter in mm									Wall mm
	4	5	6	7	8	9	10	11	12	
0,5	0,043	0,055	0,068	0,080	0,092	0,105	0,117	0,129	0,142	0,5
0,6	0,050	0,065	0,080	0,095	0,109	0,124	0,139	0,154	0,169	0,6
0,7	0,057	0,074	0,091	0,109	0,126	0,143	0,161	0,178	0,195	0,7
0,8	0,063	0,083	0,103	0,122	0,142	0,162	0,181	0,201	0,221	0,8
0,9	0,069	0,091	0,113	0,135	0,158	0,180	0,202	0,224	0,246	0,9
1	0,074	0,099	0,123	0,148	0,173	0,197	0,222	0,247	0,271	1
1,1	0,079	0,106	0,133	0,160	0,187	0,214	0,241	0,269	0,296	1,1
1,2	0,083	0,112	0,142	0,172	0,201	0,231	0,260	0,290	0,320	1,2
1,3	0,087	0,119	0,151	0,183	0,215	0,247	0,279	0,311	0,343	1,3
1,4	0,090	0,124	0,159	0,193	0,228	0,262	0,297	0,331	0,366	1,4
1,5	0,092	0,129	0,166	0,203	0,240	0,277	0,314	0,351	0,388	1,5
1,6			0,174	0,213	0,253	0,292	0,331	0,371	0,410	1,6
1,7			0,180	0,222	0,264	0,306	0,348	0,390	0,432	1,7
1,8			0,186	0,231	0,275	0,320	0,364	0,408	0,453	1,8
1,9			0,192	0,239	0,286	0,333	0,379	0,426	0,473	1,9
2			0,197	0,247	0,296	0,345	0,395	0,444	0,493	2
2,2			0,206	0,260	0,315	0,369	0,423	0,477	0,532	2,2
2,50					0,339	0,401	0,462	0,524	0,586	2,50
2,8							0,497	0,566	0,635	2,8
3							0,518	0,592	0,666	3
3,25							0,541	0,621	0,701	3,25
3,50							0,561	0,647	0,734	3,50
3,75							0,578	0,670	0,763	3,75
4							0,592	0,691	0,789	4
4,25									0,812	4,25
4,50									0,832	4,50

Weights for Precision Steel Tubes
kg/m

Wall mm	Outside diameter in mm									Wall mm
	13	14	15	16	17	18	19	20	21	
0,5	0,154	0,166	0,179	0,191	0,203	0,216	0,228	0,240	0,253	0,5
0,6	0,183	0,198	0,213	0,228	0,243	0,257	0,272	0,287	0,302	0,6
0,7	0,212	0,230	0,247	0,264	0,281	0,299	0,316	0,333	0,350	0,7
0,8	0,241	0,260	0,280	0,300	0,320	0,339	0,359	0,379	0,399	0,8
0,9	0,269	0,291	0,313	0,335	0,357	0,380	0,402	0,424	0,446	0,9
1	0,296	0,321	0,345	0,370	0,395	0,419	0,444	0,469	0,493	1
1,1	0,323	0,350	0,377	0,404	0,431	0,458	0,486	0,513	0,540	1,1
1,2	0,349	0,379	0,408	0,438	0,468	0,497	0,527	0,556	0,586	1,2
1,3	0,375	0,407	0,439	0,471	0,503	0,535	0,567	0,599	0,632	1,3
1,4	0,400	0,435	0,470	0,504	0,539	0,573	0,608	0,642	0,677	1,4
1,5	0,425	0,462	0,499	0,536	0,573	0,610	0,647	0,684	0,721	1,5
1,6	0,450	0,489	0,529	0,568	0,608	0,647	0,687	0,726	0,765	1,6
1,7	0,474	0,516	0,558	0,599	0,641	0,683	0,725	0,767	0,809	1,7
1,8	0,497	0,542	0,586	0,630	0,675	0,719	0,763	0,808	0,852	1,8
1,9	0,520	0,567	0,614	0,661	0,707	0,754	0,801	0,848	0,895	1,9
2	0,543	0,592	0,641	0,690	0,740	0,789	0,838	0,888	0,937	2
2,2	0,586	0,640	0,694	0,749	0,803	0,857	0,911	0,966	1,020	2,2
2,50	0,647	0,709	0,771	0,832	0,894	0,956	1,017	1,079	1,141	2,50
2,8	0,704	0,773	0,842	0,911	0,981	1,050	1,119	1,188	1,257	2,8
3	0,740	0,814	0,888	0,962	1,036	1,110	1,184	1,258	1,332	3
3,25	0,781	0,862	0,942	1,022	1,102	1,182	1,262	1,342	1,423	3,25
3,50	0,820	0,906	0,993	1,079	1,165	1,251	1,338	1,424	1,510	3,50
3,75	0,855	0,948	1,040	1,133	1,225	1,318	1,410	1,503	1,595	3,75
4	0,888	0,986	1,085	1,184	1,282	1,381	1,480	1,578	1,677	4
4,25	0,917	1,022	1,127	1,231	1,336	1,441	1,546	1,651	1,755	4,25
4,50	0,943	1,054	1,165	1,276	1,387	1,498	1,609	1,720	1,831	4,5
4,75		1,084	1,201	1,318	1,435	1,552	1,669	1,786	1,903	4,75
5		1,110	1,233	1,356	1,480	1,603	1,726	1,850	1,973	5
5,25			1,262	1,392	1,521	1,651	1,780	1,910	2,039	5,25
5,50			1,289	1,424	1,560	1,695	1,831	1,967	2,102	5,50
5,75			1,312	1,453	1,595	1,737	1,879	2,021	2,162	5,75
6				1,480	1,628	1,776	1,924	2,072	2,220	6
6,25								2,119	2,273	6,25
6,50								2,164	2,324	6,50
6,75								2,206	2,372	6,75
7								2,244	2,417	7

Wall	Outside diameter in mm									Wall
mm	22	23	24	25	26	27	28	29	30	mm
0,5	0,265	0,277	0,290	0,302	0,314	0,327	0,339	0,351	0,364	0,5
0,6	0,317	0,331	0,346	0,361	0,376	0,391	0,405	0,420	0,435	0,6
0,7	0,368	0,385	0,402	0,419	0,437	0,454	0,471	0,489	0,506	0,7
0,8	0,418	0,438	0,458	0,477	0,497	0,517	0,537	0,556	0,576	0,8
0,9	0,468	0,490	0,513	0,535	0,557	0,579	0,601	0,624	0,645	0,9
1	0,518	0,543	0,567	0,592	0,617	0,641	0,666	0,690	0,715	1
1,1	0,567	0,594	0,621	0,648	0,675	0,703	0,730	0,757	0,784	1,1
1,2	0,616	0,645	0,675	0,704	0,734	0,763	0,793	0,823	0,852	1,2
1,3	0,664	0,696	0,728	0,760	0,792	0,824	0,856	0,888	0,920	1,3
1,4	0,711	0,746	0,780	0,815	0,849	0,884	0,918	0,953	0,987	1,4
1,5	0,758	0,795	0,832	0,869	0,906	0,943	0,98	1,017	1,054	1,5
1,6	0,805	0,844	0,884	0,923	0,963	1,002	1,042	1,081	1,121	1,6
1,7	0,851	0,893	0,935	0,977	1,019	1,061	1,103	1,144	1,186	1,7
1,8	0,897	0,941	0,985	1,030	1,074	1,119	1,163	1,207	1,252	1,8
1,9	0,942	0,989	1,035	1,082	1,129	1,176	1,223	1,270	1,317	1,9
2	0,986	1,036	1,085	1,134	1,184	1,233	1,282	1,332	1,381	2
2,2	1,074	1,129	1,183	1,237	1,291	1,346	1,400	1,454	1,508	2,2
2,50	1,202	1,264	1,325	1,387	1,449	1,510	1,572	1,634	1,695	2,50
2,8	1,326	1,395	1,464	1,533	1,602	1,671	1,740	1,809	1,878	2,8
3	1,406	1,480	1,554	1,628	1,702	1,776	1,850	1,923	1,997	3
3,25	1,503	1,583	1,663	1,743	1,823	1,903	1,984	2,064	2,144	3,25
3,50	1,597	1,683	1,769	1,856	1,942	2,028	2,115	2,201	2,287	3,50
3,75	1,688	1,780	1,873	1,965	2,056	2,150	2,243	2,335	2,427	3,75
4	1,776	1,874	1,973	2,071	2,170	2,269	2,367	2,466	2,565	4
4,25	1,860	1,965	2,070	2,175	2,280	2,384	2,489	2,594	2,699	4,25
4,50	1,942	2,053	2,164	2,275	2,386	2,497	2,608	2,719	2,830	4,50
4,75	2,021	2,138	2,255	2,372	2,489	2,606	2,723	2,841	2,958	4,75
5	2,096	2,219	2,343	2,466	2,589	2,713	2,836	2,959	3,083	5
5,25	2,169	2,298	2,427	2,557	2,686	2,816	2,945	3,075	3,204	5,25
5,50	2,238	2,374	2,509	2,645	2,780	2,916	3,052	3,187	3,323	5,50
5,75	2,304	2,446	2,588	2,730	2,871	3,013	3,155	3,297	3,439	5,75
6	2,368	2,515	2,663	2,811	2,959	3,107	3,255	3,403	3,551	6
6,25	2,428	2,582	2,736	2,890	3,044	3,198	3,352	3,506	3,660	6,25
6,50	2,485	2,645	2,805	2,966	3,126	3,286	3,446	3,607	3,767	6,50
6,75	2,539	2,705	2,872	3,038	3,204	3,371	3,537	3,704	3,870	6,75
7	2,589	2,762	2,935	3,107	3,280	3,453	3,625	3,798	3,971	7
7,25				3,174	3,325	3,531	3,710	3,889	4,068	7,25
7,50				3,237	3,422	3,607	3,792	3,977	4,162	7,50
7,75				3,297	3,488	3,679	3,870	4,061	4,253	7,75
8				3,354	3,551	3,749	3,946	4,143	4,340	8
8,50							4,088	4,297	4,507	8,50
9							4,217	4,439	4,661	9
9,50									4,803	9,50
10									4,932	10

Weights for Precision Steel Tubes
kg/m

Wall mm	Outside diameter in mm									Wall mm
	31	32	33	34	35	36	37	38	39	
0,5	0,376	0,388	0,401	0,413	0,425	0,438	0,450	0,462	0,475	0,5
0,6	0,450	0,465	0,479	0,494	0,509	0,524	0,539	0,553	0,568	0,6
0,7	0,523	0,540	0,558	0,575	0,592	0,609	0,627	0,644	0,661	0,7
0,8	0,596	0,616	0,635	0,655	0,675	0,694	0,714	0,734	0,754	0,8
0,9	0,668	0,690	0,712	0,735	0,757	0,779	0,801	0,823	0,846	0,9
1	0,740	0,764	0,789	0,814	0,838	0,863	0,888	0,912	0,937	1
1,1	0,811	0,838	0,865	0,892	0,920	0,947	0,974	1,001	1,028	1,1
1,2	0,882	0,911	0,941	0,971	1,000	1,030	1,059	1,089	1,119	1,2
1,3	0,952	0,984	1,016	1,048	1,080	1,112	1,144	1,177	1,209	1,3
1,4	1,022	1,056	1,091	1,125	1,160	1,195	1,229	1,264	1,298	1,4
1,5	1,091	1,128	1,165	1,202	1,239	1,276	1,313	1,350	1,387	1,5
1,6	1,160	1,199	1,239	1,278	1,318	1,357	1,397	1,436	1,476	1,6
1,7	1,228	1,270	1,312	1,354	1,396	1,438	1,480	1,522	1,564	1,7
1,8	1,296	1,341	1,385	1,429	1,474	1,518	1,562	1,607	1,651	1,8
1,9	1,363	1,410	1,457	1,504	1,551	1,598	1,645	1,691	1,738	1,9
2	1,430	1,480	1,529	1,578	1,628	1,677	1,726	1,776	1,825	2
2,2	1,563	1,617	1,671	1,725	1,780	1,834	1,888	1,942	2,051	2,2
2,50	1,757	1,819	1,880	1,942	2,004	2,065	2,127	2,189	2,250	2,50
2,8	1,947	2,016	2,085	2,154	2,223	2,293	2,362	2,431	2,500	2,8
3	2,071	2,145	2,219	2,293	2,367	2,441	2,515	2,589	2,663	3
3,25	2,224	2,304	2,384	2,464	2,545	2,625	3,705	2,785	2,865	3,25
3,50	2,374	2,460	2,546	2,632	2,719	2,805	2,891	2,978	3,064	3,50
3,75	2,520	2,612	2,705	2,797	2,890	2,982	3,075	3,167	3,260	3,75
4	2,663	2,762	2,861	2,959	3,058	3,156	3,255	3,354	3,452	4
4,25	2,804	2,908	3,013	3,118	3,223	3,328	3,432	3,537	3,642	4,25
4,50	2,941	3,052	3,163	3,274	3,385	3,496	3,607	3,717	3,828	4,50
4,75	3,075	3,192	3,309	3,426	3,543	3,660	3,778	3,895	4,012	4,75
5	3,206	3,329	3,452	3,576	3,699	3,822	3,946	4,069	4,192	5
5,25	3,334	3,463	3,599	3,722	3,852	3,981	4,111	4,240	4,369	5,25
5,50	3,459	3,594	3,730	3,865	4,001	4,137	4,272	4,408	4,544	5,50
5,75	3,580	3,722	3,864	4,006	4,148	4,289	4,431	4,573	4,715	5,75
6	3,699	3,847	3,995	4,143	4,291	4,439	4,587	4,735	4,883	6
6,25	3,815	3,969	4,123	4,277	4,431	4,585	4,739	4,893	5,048	6,25
6,50	3,927	4,087	4,248	4,408	4,568	4,729	4,889	5,049	5,209	6,50
6,75	4,037	4,203	4,369	4,536	4,702	4,869	5,035	5,202	5,968	6,75
7	4,143	4,316	4,488	4,661	4,834	5,006	5,179	5,351	5,524	7
7,25	4,246	4,425	4,604	4,783	4,962	5,140	5,319	5,498	5,676	7,25
7,50	4,347	4,532	4,716	4,901	5,086	5,271	5,456	5,641	5,826	7,50
7,75	4,444	4,635	4,826	5,017	5,208	5,399	5,590	5,782	5,973	7,75
8	4,538	4,735	4,932	5,130	5,327	5,524	5,721	5,919	6,116	8
8,50	4,717	4,926	5,136	5,345	5,555	5,765	5,974	6,184	6,394	8,50
9	4,883	5,105	5,327	5,549	5,771	5,993	6,215	6,437	6,659	9
9,50	5,037	5,271	5,506	5,740	5,974	6,209	6,443	6,677	6,811	9,50
10	5,179	5,426	5,672	5,919	6,165	6,412	6,659	6,905	7,152	10

Weights for Precision Steel Tubes
kg/m

Wall	Outside diameter in mm									Wall
mm	40	41	42	43	44	45	46	47	48	mm
0,5	0,487	0,499	0,512	0,524	0,536	0,549	0,561	0,573	0,586	0,5
0,6	0,583	0,598	0,613	0,627	0,642	0,657	0,672	0,687	0,701	0,6
0,7	0,678	0,696	0,713	0,730	0,747	0,765	0,782	0,799	0,817	0,7
0,8	0,773	0,793	0,813	0,833	0,852	0,872	0,892	0,911	0,931	0,8
0,9	0,868	0,890	0,912	0,934	0,957	0,979	1,001	1,023	1,045	0,9
1	0,962	0,986	1,011	1,036	1,060	1,085	1,110	1,134	1,159	1
1,1	1,055	1,082	1,109	1,136	1,164	1,191	1,218	1,245	1,272	1,1
1,2	1,148	1,178	1,207	1,237	1,267	1,296	1,326	1,355	1,385	1,2
1,3	1,241	1,273	1,305	1,337	1,369	1,401	1,433	1,465	1,497	1,3
1,4	1,333	1,367	1,402	1,436	1,471	1,505	1,540	1,574	1,609	1,4
1,5	1,424	1,461	1,498	1,535	1,572	1,609	1,646	1,683	1,720	1,5
1,6	1,515	1,555	1,594	1,633	1,673	1,712	1,752	1,791	1,831	1,6
1,7	1,606	1,648	1,689	1,731	1,773	1,815	1,857	1,899	1,941	1,7
1,8	1,696	1,740	1,784	1,829	1,873	1,918	1,962	2,006	2,051	1,8
1,9	1,785	1,832	1,879	1,926	1,973	2,019	2,066	2,113	2,160	1,9
2	1,874	1,923	1,973	2,022	2,071	2,121	2,170	2,219	2,269	2
2,2	2,051	2,105	2,159	2,214	2,268	2,322	2,376	2,431	2,485	2,2
2,50	2,312	2,374	2,435	2,497	2,558	2,620	2,682	2,743	2,805	2,50
2,8	2,569	2,638	2,707	2,776	2,845	2,914	2,983	3,052	3,121	2,8
3	2,737	2,811	2,885	2,959	3,033	3,107	3,181	3,255	3,329	3
3,25	2,945	3,025	3,106	3,186	3,266	3,346	3,426	3,506	3,586	3,25
3,50	3,150	3,237	3,323	3,409	3,496	3,582	3,668	3,754	3,841	3,50
3,75	3,352	3,445	3,537	3,630	3,722	3,815	3,907	4,000	4,092	3,75
4	3,551	3,650	3,748	3,847	3,946	4,044	4,143	4,242	4,340	4
4,25	3,747	3,852	3,956	4,061	4,166	4,271	4,376	4,480	4,585	4,25
4,50	3,939	4,050	4,161	4,272	4,383	4,494	4,605	4,716	4,827	4,50
4,75	4,129	4,246	4,363	4,480	4,598	4,715	4,832	4,949	5,066	4,75
5	4,316	4,439	4,562	4,685	4,809	4,932	5,055	5,179	5,302	5
5,25	4,499	4,628	4,758	4,887	5,017	5,146	5,276	5,405	5,535	5,25
5,50	4,679	4,815	4,950	5,086	5,222	5,357	5,493	5,629	5,764	5,50
5,75	4,856	4,998	5,140	5,282	5,424	5,565	5,707	5,849	5,991	5,75
6	5,031	5,179	5,327	5,475	5,622	5,770	6,918	6,066	6,214	6
6,25	5,202	5,356	5,510	5,664	5,818	5,972	6,126	6,281	6,435	6,25
6,50	5,370	5,530	5,690	5,851	6,011	6,171	6,331	6,492	6,652	6,50
6,75	5,535	5,701	5,868	6,034	6,200	6,367	6,533	6,700	6,866	6,75
7	5,696	5,869	6,042	6,214	6,387	6,560	6,732	6,905	7,077	7
7,25	5,855	6,034	6,213	6,392	6,570	6,749	6,928	7,107	7,285	7,25
7,50	6,011	6,196	6,381	6,566	6,751	6,936	7,121	7,306	7,490	7,50
7,75	6,164	6,355	6,546	6,737	6,928	7,119	7,310	7,501	7,692	7,75
8	6,313	6,511	6,708	6,905	7,103	7,299	7,497	7,694	7,891	8
8,50	6,603	6,813	7,022	7,232	7,442	7,651	7,861	8,071	8,280	8,50
9	6,881	7,102	7,324	7,546	7,768	7,990	8,212	8,434	8,656	9
9,50	7,146	7,380	7,614	7,849	8,083	8,317	8,551	8,786	9,020	9,50
10	7,398	7,645	7,892	8,138	8,385	8,632	8,878	9,125	9,371	10
11	7,867	8,138	8,410	8,681	8,952	9,223	9,495	9,766	10,04	11
12	8,286	8,582	8,878	9,174	9,470	9,766	10,06	10,36	10,65	12

Weights for Precision Steel Tubes
kg/m

Wall mm	Outside diameter in mm									Wall mm
	49	50	51	52	53	54	55	56	57	
0,5	0,598	0,610								0,5
0,6	0,716	0,731								0,6
0,7	0,834	0,851								0,7
0,8	0,951	0,971								0,8
0,9	1,068	1,090								0,9
1	1,184	1,208	1,233	1,258	1,282	1,307	1,332	1,356	1,381	1
1,1	1,299	1,326	1,354	1,381	1,408	1,435	1,462	1,489	1,516	1,1
1,2	1,414	1,444	1,474	1,503	1,533	1,562	1,592	1,622	1,651	1,2
1,3	1,529	1,561	1,593	1,625	1,657	1,689	1,722	1,754	1,786	1,3
1,4	1,643	1,678	1,712	1,747	1,781	1,816	1,850	1,885	1,920	1,4
1,5	1,757	1,794	1,831	1,867	1,905	1,942	1,979	2,016	2,053	1,5
1,6	1,870	1,910	1,949	1,988	2,028	2,067	2,107	2,146	2,186	1,6
1,7	1,983	2,025	2,067	2,109	2,151	2,193	2,234	2,276	2,318	1,7
1,8	2,095	2,140	2,184	2,228	2,273	2,317	2,361	2,406	2,450	1,8
1,9	2,207	2,254	2,901	2,347	2,394	2,441	2,488	2,535	2,582	1,9
2	2,318	2,367	2,417	2,466	2,515	2,565	2,614	2,663	2,713	2
2,2	2,539	2,593	2,648	2,702	2,756	2,810	2,865	2,919	2,973	2,2
2,50	2,867	2,928	2,990	3,052	3,113	3,175	3,237	3,298	3,360	2,50
2,8	3,190	3,259	3,328	3,397	3,466	3,535	3,605	3,674	3,743	2,8
3	3,403	3,477	3,551	3,625	3,699	3,773	3,847	3,921	3,995	3
3,25	3,667	3,747	3,827	3,907	3,987	4,067	4,148	4,228	4,308	3,25
3,50	3,927	4,013	4,100	4,186	4,272	4,359	4,445	4,531	4,618	3,50
3,75	4,184	4,277	4,369	4,462	4,554	4,647	4,739	4,832	4,924	3,75
4	4,439	4,537	4,636	4,735	4,833	4,932	5,031	5,129	5,228	4
4,25	4,690	4,795	4,900	5,004	5,109	5,214	5,319	5,424	5,528	4,25
4,50	4,938	5,049	5,160	5,271	5,382	5,493	5,604	5,715	5,826	4,50
4,75	5,183	5,300	5,417	5,535	5,652	5,769	5,886	6,003	6,120	4,75
5	5,425	5,549	5,672	5,795	5,918	6,042	6,165	6,288	6,412	5
5,25	5,664	5,794	5,923	6,052	6,182	6,311	6,441	6,570	6,700	5,25
5,50	5,900	6,036	6,171	6,307	6,442	6,578	6,714	6,849	6,985	5,50
5,75	6,133	6,274	6,416	6,558	6,700	6,842	6,983	7,125	7,267	5,75
6	6,362	6,510	6,658	6,806	6,954	7,102	7,250	7,398	7,546	6
6,25	6,589	6,743	6,897	7,051	7,205	7,359	7,514	7,668	7,822	6,25
6,50	6,812	6,973	7,133	7,293	7,453	7,614	7,774	7,934	8,095	6,50
6,75	7,033	7,199	7,366	7,532	7,699	7,865	8,031	8,198	8,364	6,75
7	7,250	7,423	7,595	7,768	7,941	8,113	8,286	8,458	8,631	7
7,25	7,464	7,643	7,822	8,001	8,179	8,358	8,537	8,716	8,895	7,25
7,50	7,675	7,860	8,045	8,230	8,415	8,600	8,785	8,970	9,155	7,50
7,75	7,883	8,075	8,266	8,547	8,648	8,839	9,030	9,221	9,412	7,75
8	8,088	8,286	8,483	8,680	8,878	9,075	9,272	9,469	9,667	8
8,50	8,490	8,699	8,909	9,119	9,328	9,538	9,747	9,957	10,17	8,50
9	8,878	9,100	9,322	9,544	9,766	9,988	10,21	10,43	10,65	9
9,50	9,254	9,489	9,723	9,957	10,19	10,43	10,66	10,89	11,13	9,50
10	9,618	9,865	10,11	10,36	10,60	10,85	11,10	11,34	11,59	10
11	10,31	10,58	10,85	11,12	11,39	11,67	11,94	12,21	12,48	11
12	10,95	11,25	11,54	11,84	12,13	12,43	12,73	13,02	13,32	12
13		11,86	12,18	12,50	12,82	13,15	13,47	13,79	14,11	13
14				13,12	13,47	13,81	14,16	14,50	14,85	14
15				13,69	14,06	14,43	14,80	15,17	15,54	15
16				14,21	14,60	14,99	15,39	15,78	16,18	16

Weights for Precision Steel Tubes
kg/m

Wall	Outside diameter in mm									Wall
mm	58	59	60	61	62	63	64	65	66	mm
1	1,406	1,430	1,455	1,480	1,504	1,529	1,554	1,578	1,603	1
1,1	1,543	1,570	1,598	1,625	1,652	1,679	1,706	1,733	1,760	1,1
1,2	1,681	1,710	1,740	1,770	1,799	1,829	1,858	1,888	1,918	1,2
1,3	1,818	1,850	1,882	1,914	1,946	1,978	2,010	2,042	2,074	1,3
1,4	1,954	1,989	2,023	2,058	2,092	2,127	2,161	2,196	2,230	1,4
1,5	2,090	2,127	2,164	2,201	2,238	2,275	2,312	2,349	2,386	1,5
1,6	2,225	2,265	2,304	2,344	2,383	2,423	2,462	2,502	2,541	1,6
1,7	2,360	2,402	2,444	2,486	2,528	2,570	2,612	2,654	2,696	1,7
1,8	2,495	2,539	2,583	2,628	2,672	2,717	2,761	2,805	2,850	1,8
1,9	2,629	2,675	2,722	2,769	2,816	2,863	2,910	2,956	3,003	1,9
2	2,762	2,811	2,861	2,910	2,959	3,009	3,058	3,107	3,156	2
2,2	3,027	3,082	3,136	3,190	3,244	3,299	3,353	3,407	3,461	2,2
2,50	3,422	3,483	3,545	3,607	3,668	3,730	3,791	3,853	3,915	2,50
2,8	3,812	3,881	3,950	4,019	4,088	4,157	4,226	4,295	4,364	2,8
3	4,069	4,143	4,217	4,291	4,365	4,439	4,513	4,587	4,661	3
3,25	4,388	4,468	4,548	4,628	4,709	4,789	4,869	4,949	5,029	3,25
3,50	4,704	4,790	4,877	4,963	5,049	5,135	5,222	5,308	5,394	3,50
3,75	5,017	5,109	5,202	5,294	5,387	5,479	5,572	5,664	5,757	3,75
4	5,327	5,425	5,524	5,622	5,721	5,820	5,918	6,017	6,116	4
4,25	5,633	5,738	5,843	5,948	6,052	6,157	6,262	6,367	6,472	4,25
4,50	5,937	6,048	6,159	6,270	6,381	6,492	6,603	6,714	6,825	4,50
4,75	6,237	6,355	6,472	6,589	6,706	6,823	6,940	7,057	7,175	4,75
5	6,535	6,658	6,782	6,905	7,028	7,151	7,275	7,398	7,521	5
5,25	6,829	6,959	7,088	7,218	7,347	7,477	7,606	7,736	7,865	5,25
5,50	7,121	7,256	7,392	7,527	7,663	7,799	7,934	8,070	8,206	5,50
5,75	7,409	7,551	7,692	7,834	7,976	8,118	8,260	8,401	8,543	5,75
6	7,694	7,842	7,990	8,138	8,286	8,434	8,582	8,730	8,878	6
6,25	7,976	8,130	8,284	8,438	8,592	8,747	8,901	9,055	9,209	6,25
6,50	8,255	8,415	8,576	8,736	8,896	9,056	9,217	9,377	9,537	6,50
6,75	8,531	8,697	8,864	9,030	9,197	9,363	9,530	9,696	9,862	6,75
7	8,804	8,976	9,149	9,321	9,494	9,667	9,839	10,01	10,18	7
7,25	9,073	9,252	9,431	9,610	9,788	9,967	10,15	10,32	10,50	7,25
7,50	9,340	9,525	9,710	9,895	10,08	10,26	10,45	10,63	10,82	7,50
7,75	9,604	9,795	9,986	10,18	10,37	10,56	10,75	10,94	11,13	7,75
8	9,864	10,06	10,26	10,46	10,65	10,85	11,05	11,24	11,44	8
8,50	10,38	10,59	10,80	11,01	11,22	11,42	11,63	11,84	12,05	8,50
9	10,88	11,10	11,32	11,54	11,76	11,99	12,21	12,43	12,65	9
9,50	11,36	11,60	11,83	12,07	12,30	12,53	12,77	13,00	13,24	9,50
10	11,84	12,08	12,33	12,58	12,82	13,07	13,32	13,56	13,81	10
11	12,75	13,02	13,29	13,56	13,84	14,11	14,38	14,65	14,92	11
12	13,61	13,91	14,21	14,50	14,80	15,09	15,39	15,69	15,98	12
13	14,43	14,75	15,07	15,39	15,71	16,03	16,35	16,67	16,99	13
14	15,19	15,54	15,88	16,23	16,57	16,92	17,26	17,61	17,95	14
15	15,91	16,28	16,65	17,02	17,39	17,76	18,13	18,50	18,87	15
16	16,57	16,97	17,36	17,76	18,15	18,55	18,94	19,34	19,73	16

Weights for Precision Steel Tubes
kg/m

Wall	Outside diameter in mm									Wall
mm	67	68	69	70	71	72	73	74	75	mm
1	1,628	1,652	1,677	1,702	1,726	1,751	1,776	1,800	1,825	1
1,1	1788	1,815	1,842	1,869	1,896	1,923	1,950	1,977	2,005	1,1
1,2	1,947	1,977	2,006	2,036	2,066	2,095	2,125	2,154	2,184	1,2
1,3	2,106	2,138	2,170	2,202	2,234	2,267	2,299	2,331	2,363	1,3
1,4	2,265	2,299	2,334	2,368	2,403	2,437	2,472	2,506	2,541	1,4
1,5	2,423	2,460	2,497	2,534	2,571	2,608	2,645	2,682	2,719	1,5
1,6	2,580	2,620	2,659	2,699	2,738	2,778	2,817	2,857	2,896	1,6
1,7	2,738	2,779	2,821	2,863	2,905	2,947	2,989	3,031	3,073	1,7
1,8	2,894	2,938	2,982	3,027	3,072	3,116	3,160	3,204	3,249	1,8
1,9	3,050	3,097	3,144	3,191	3,238	3,284	3,331	3,378	3,425	1,9
2	3,206	3,255	3,304	3,354	3,403	3,452	3,502	3,551	3,600	2
2,2	3,516	3,570	3,624	3,679	3,739	3,787	9,841	3,896	3,950	2,2
2,50	3,976	4,038	4,100	4,161	4,223	4,285	4,346	4,408	4,470	2,50
2,8	4,433	4,502	4,571	4,640	4,709	4,778	4,847	4,917	4,986	2,8
3	4,735	4,809	4,883	4,957	5,031	5,105	5,179	5,252	5,327	3
3,25	5,109	5,189	5,270	5,350	5,430	5,510	5,590	5,670	5,750	3,25
3,50	5,481	5,567	5,653	5,740	5,826	5,912	5,999	6,085	6,171	3,50
3,75	5,849	5,942	6,034	6,126	6,219	6,311	6,404	6,496	6,589	3,75
4	6,214	6,313	6,412	6,510	6,609	6,708	6,806	6,905	7,003	4
4,25	6,577	6,681	6,786	6,891	6,996	7,101	7,205	7,310	7,415	4,25
4,50	6,936	7,047	7,158	7,269	7,380	7,490	7,601	7,712	7,823	4,50
4,75	7,292	7,409	7,526	7,643	7,760	7,877	7,994	8,112	8,229	4,75
5	7,645	7,768	7,891	8,015	8,138	8,261	8,384	8,508	8,631	5
5,25	7,994	8,124	8,253	8,383	8,512	8,642	8,771	8,901	9,030	5,25
5,50	8,341	8,477	8,613	8,748	8,884	9,019	9,155	9,291	9,426	5,50
5,75	8,685	8,827	8,969	9,110	9,252	9,394	9,536	9,678	9,819	5,75
6	9,026	9,174	9,321	9,469	9,617	9,765	9,913	10,06	10,21	6
6,25	9,363	9,517	9,671	9,825	9,980	10,13	10,29	10,44	10,60	6,25
6,50	9,698	9,858	10,02	10,18	10,34	10,50	10,66	10,82	10,98	6,50
6,75	10,03	10,20	10,36	10,53	10,69	10,86	11,03	11,19	11,36	6,75
7	10,36	10,53	10,70	10,88	11,05	11,22	11,39	11,57	11,74	7
7,25	10,68	10,86	11,04	11,22	11,40	11,58	11,76	11,93	12,11	7,25
7,50	11,00	11,19	11,37	11,56	11,74	11,93	12,11	12,30	12,48	7,50
7,75	11,32	11,51	11,71	11,90	12,09	12,28	12,47	12,66	12,85	7,75
8	11,64	11,84	12,03	12,23	12,43	12,63	12,82	13,02	13,22	8
8,50	12,26	12,47	12,68	12,89	13,10	13,31	13,52	13,73	13,94	8,50
9	12,87	13,10	13,32	13,54	13,76	13,98	14,21	14,43	14,65	9
9,50	13,47	13,71	13,94	14,17	14,41	14,64	14,88	15,11	15,35	9,50
10	14,06	14,30	14,55	14,80	15,04	15,29	15,54	15,78	16,03	10
11	15,19	15,46	15,73	16,01	16,28	16,55	16,82	17,09	17,36	11
12	16,28	16,57	16,87	17,16	17,46	17,76	18,05	18,35	18,64	12
13	17,31	17,63	17,95	18,27	18,60	18,92	19,24	19,56	19,8g	13
14	18,30	18,64	18,99	19,34	19,68	20,03	20,37	20,72	21,06	14
15	19,24	19,61	19,98	20,35	20,72	21,09	21,46	21,83	22,20	15
16	20,12	20,52	20,91	21,31	21,70	22,10	22,49	22,89	23,28	16
17	20,96	21,38	21,80	22,22	22,64	23,06	23,48	23,90	24,32	17
18	21,75	22,20	22,64	23,08	23,53	23,97	24,42	24,86	25,30	18

Weights for Precision Steel Tubes
kg/m

Wall mm	Outside diameter in mm									Wall mm
	76	77	78	79	80	81	82	83	84	
1	1,850	1,874	1,899	1,923	1,948	1,973	1,997	2,022	2,047	1
1,1	2,032	2,059	2,086	2,113	2,140	2,167	2,194	2,222	2,249	1,1
1,2	2,213	2,243	2,273	2,302	2,332	2,361	2,391	2,421	2,450	1,2
1,3	2,395	2,427	2,459	2,491	2,523	2,555	2,587	2,619	2,651	1,3
1,4	2,575	2,610	2,645	2,679	2,714	2,748	2,783	2,817	2,852	1,4
1,5	2,756	2,793	2,830	2,867	2,904	2,941	2,978	3,015	3,052	1,5
1,6	2,936	2,975	3,014	3,054	3,093	3,133	3,172	3,212	3,251	1,6
1,7	3,115	3,157	3,198	3,241	3,282	3,324	3,366	3,408	3,450	1,7
1,8	3,294	3,338	3,382	3,427	3,471	3,516	3,560	3,604	3,649	1,8
1,9	3,472	3,519	3,566	3,612	3,659	3,706	3,753	3,800	3,847	1,9
2	3,650	3,699	3,748	3,798	3,847	3,896	3,946	3,995	4,044	2
2,2	4,004	4,058	4,113	4,167	4,221	4,275	4,330	4,384	4,438	2,2
2,50	4,531	4,593	4,655	4,716	4,778	4,840	4,901	4,963	5,024	2,50
2,8	5,055	5,124	5,193	5,262	5,331	5,400	5,469	5,538	5,607	2,8
3	5,401	5,475	5,549	5,622	5,696	5,770	5,844	5,918	5,992	3
3,25	5,831	5,911	5,991	6,071	6,151	6,231	6,311	6,392	6,472	3,25
3,50	6,257	6,344	6,430	6,516	6,603	6,689	6,775	6,862	6,948	3,50
3,75	6,681	6,774	6,866	6,959	7,051	7,144	7,236	7,325	7,421	3,75
4	7,102	7,201	7,299	7,398	7,497	7,595	7,694	7,793	7,891	4
4,25	7,520	7,625	7,729	7,835	7,939	8,044	8,149	8,253	8,358	4,25
4,50	7,934	8,045	8,156	8,267	8,378	8,489	8,600	8,711	8,822	4,50
4,75	8,346	8,463	8,580	8,697	8,814	8,932	9,049	9,166	9,283	4,75
5	8,754	8,878	9,001	9,124	9,248	8,371	9,494	9,617	9,741	5
5,25	9,160	9,289	9,419	9,548	9,678	9,807	9,936	10,07	10,20	5,25
5,50	9,562	9,698	9,833	9,969	10,10	10,24	10,38	10,51	10,65	5,50
5,75	9,961	10,10	10,24	10,39	10,53	10,67	10,81	10,95	11,10	5,75
6	10,36	10,51	10,65	10,80	10,95	11,10	11,24	11,39	11,54	6
6,25	10,75	10,90	11,06	11,21	11,37	11,52	11,67	11,83	11,98	6,25
6,50	11,14	11,30	11,46	11,62	11,78	11,94	12,10	12,26	12,42	6,50
6,75	11,53	11,69	11,86	12,03	12,19	12,36	12,53	12,69	12,86	6,75
7	11,91	12,08	12,25	12,43	12,60	12,77	12,95	13,12	13,29	7
7,25	12,29	12,47	12,65	12,83	13,01	13,19	13,36	13,54	13,72	7,25
7,50	12,67	12,85	13,04	13,22	13,41	13,59	13,78	13,96	14,15	7,50
7,75	13,04	13,23	13,43	13,62	13,81	14,00	14,19	14,38	14,57	7,75
8	13,42	13,61	13,81	14,01	14,20	14,40	14,60	14,80	14,99	8
8,50	14,15	14,36	14,57	14,78	14,99	15,20	15,41	15,62	15,83	8,50
9	14,87	15,09	15,32	15,54	15,76	15,98	16,20	16,43	16,65	9
9,50	15,58	15,81	16,05	16,28	16,52	16,75	16,99	17,22	17,45	9,50
10	16,28	16,52	16,77	17,02	17,26	17,51	17,76	18,00	18,25	10
11	17,63	17,90	18,18	18,45	18,72	18,99	19,26	19,53	19,80	11
12	18,94	19,24	19,53	19,83	20,12	20,42	20,72	21,01	21,31	12
13	20,20	20,52	20,84	21,16	21,48	21,80	22,12	22,44	22,76	13
14	21,41	21,75	22,10	22,44	22,79	23,13	23,48	23,82	24,17	14
15	22,57	22,94	23,31	23,68	24,05	24,42	24,79	25,16	25,53	15
16	23,68	24,07	24,46	24,86	25,25	25,65	26,04	26,44	26,83	16
17	24,74	25,16	25,57	25,99	26,41	26,83	27,52	27,67	28,09	17
18	25,75	26,19	26,63	27,08	27,52	27,97	28,41	28,85	29,30	18

Weights for Precision Steel Tubes
kg/m

Wall	Outside diameter in mm									Wall
mm	85	86	87	88	89	90	95	100	105	mm
1	2,071	2,096	2,121	2,145	2,170	2,195				1
1,1	2,276	2,303	2,330	2,357	2,984	2,412				1,1
1,2	2,480	2,509	2,539	2,569	2,598	2,628				1,2
1,3	2,683	2,715	2,747	2,779	2,811	2,844				1,3
1,4	2,886	2,921	2,955	2,989	3,024	3,059				1,4
1,5	3,089	3,126	3,163	3,200	3,237	3,274	3,459			1,5
1,6	3,291	3,330	3,370	3,409	3,448	3,488	3,686			1,6
1,7	3,492	3,534	3,576	3,618	3,660	3,702	3,912			1,7
1,8	3,693	3,737	3,782	3,826	3,871	3,915	4,137			1,8
1,9	3,894	3,940	3,987	4,034	4,081	4,128	4,362			1,9
2	4,094	4,143	4,192	4,242	4,291	4,340	4,587	4,833	5,080	2
2,2	4,492	4,547	4,601	4,655	4,709	4,764	5,035	5,306	5,701	2,2
2,50	5,086	5,148	5,209	5,271	5,333	5,394	5,703	6,011	6,319	2,50
2,8	5,676	5,745	5,814	5,883	5,952	6,021	6,367	6,712	7,057	2,8
3	6,066	6,140	6,214	6,288	6,362	6,436	6,806	7,176	7,546	3
3,25	6,552	6,632	6,712	6,792	6,872	6,953	7,353	7,754	8,155	3,25
3,50	7,034	7,121	7,207	7,293	7,380	7,466	7,897	8,329	8,760	3,50
3,75	7,514	7,606	7,699	7,791	7,883	7,976	8,438	8,901	9,363	3,75
4	7,990	8,088	8,187	8,286	8,384	8,483	8,976	9,469	9,963	4
4,25	8,463	8,568	8,673	8,777	8,882	8,987	9,511	10,04	10,56	4,25
4,50	8,933	9,044	9,155	9,266	9,377	9,488	10,04	10,60	11,15	4,50
4,75	9,400	9,517	9,634	9,751	9,869	9,986	10,57	11,16	11,74	4,75
5	9,864	9,987	10,11	10,23	10,36	10,48	11,10	11,71	12,33	5
5,25	10,32	10,45	10,58	10,71	10,84	10,97	11,61	12,27	12,91	5,25
5,50	10,78	10,92	11,05	11,19	11,33	11,46	12,14	12,82	13,50	5,50
5,75	11,24	11,38	11,52	11,66	11,80	11,95	12,66	13,36	14,07	5,75
6	11,69	11,84	11,98	12,13	12,28	12,43	13,17	13,91	14,65	6
6,25	12,14	12,29	12,45	12,60	12,75	12,91	13,68	14,45	15,22	6,25
6,50	12,58	12,74	12,90	13,06	13,22	13,38	14,19	14,99	15,79	6,50
6,75	13,03	13,19	13,36	13,52	13,69	13,86	14,69	15,52	16,35	6,75
7	13,46	13,64	13,81	13,98	14,15	14,33	15,19	16,05	16,92	7
7,25	13,90	14,08	14,26	14,44	14,62	14,79	15,69	16,58	17,48	7,25
7,50	14,33	14,52	14,70	14,89	15,07	15,26	16,18	17,11	18,03	7,50
7,75	14,76	14,95	15,15	15,34	15,53	15,72	16,67	17,63	18,59	7,75
8	15,19	15,39	15,59	15,78	15,98	16,18	17,16	18,15	19,14	8
8,50	16,04	16,25	16,46	16,67	16,88	17,08	18,13	19,18	20,23	8,50
9	16,87	17,09	17,31	17,53	17,76	17,98	19,09	20,20	21,31	9
9,50	17,69	17,92	18,16	18,39	18,63	18,86	20,03	21,20	22,37	9,50
10	18,50	18,74	18,99	19,24	19,48	19,73	20,96	22,20	23,43	10
11	20,08	20,35	20,62	20,89	21,16	21,43	22,79	24,14	25,50	11
12	21,60	21,90	22,2	22,49	22,79	23,08	24,56	26,04	27,52	12
13	23,08	23,40	23,72	24,05	24,37	24,69	26,29	27,89	29,50	13
14	24,51	24,86	25,20	25,55	25,90	26,24	27,97	29,69	31,42	14
15	25,90	26,27	26,63	27,00	27,37	27,74	29,59	31,44	33,29	15
16	27,23	27,62	28,02	28,41	28,81	29,20	31,17	33,15	35,12	16
17	28,51	28,93	29,35	29,77	30,19	30,61	32,70	34,80	36,89	17
18	29,74	30,19	30,63	31,07	31,52	31,96	34,18	36,40	38,62	18
19	30,93	31,39	31,86	32,33	32,80	33,27	35,61	37,95	40,30	19
20	32,06	32,55	33,05	33,54	34,03	34,53	36,99	39,46	41,93	20

Weights for Precision Steel Tubes
kg/m

Wall mm	Outside diameter in mm									Wall mm
	110	115	120	125	130	135	140	145	150	
2	5,327	5,573	5,820	6,067						2
2,2	5,977	6,254	6,532							2,2
2,50	6,627	6,936	7,244	7,553						2,50
2,8	7,402	7,747	8,093	8,438						2,8
3	7,916	8,286	8,656	9,026	9,395	9,765	10,14	10,51	10,88	3
3,25	8,555	8,956	9,357	9,758	10,16	10,56	10,96	11,36	11,76	3,25
3,50	9,192	9,624	10,06	10,49	10,92	11,35	11,78	12,21	12,64	3,50
3,75	9,825	10,29	10,75	11,21	11,67	12,14	12,60	13,06	13,52	3,75
4	10,46	10,95	11,44	11,94	12,43	12,92	13,42	13,91	14,40	4
4,25	11,08	11,61	12,13	12,66	13,18	13,70	14,23	14,75	15,28	4,25
4,50	11,71	12,26	12,82	13,37	13,93	14,48	15,04	15,59	16,15	4,50
4,75	12,33	12,91	13,50	14,09	14,67	15,26	15,84	16,43	17,01	4,75
5	12,95	13,56	14,17	14,80	15,41	16,03	16,65	17,26	17,88	5
5,25	13,56	14,21	14,86	15,50	16,15	16,80	17,45	18,09	18,74	5,25
5,50	14,17	14,85	15,53	16,21	16,89	17,56	18,24	18,92	19,60	5,50
5,75	14,78	15,49	16,20	16,91	17,62	18,33	19,04	19,74	20,45	5,75
6	15,39	16,13	16,87	17,61	18,35	19,09	19,83	20,57	21,31	6
6,25	15,99	16,76	17,53	18,30	19,07	19,84	20,61	21,38	22,16	6,25
6,50	16,59	17,39	18,19	18,99	19,80	20,60	21,40	22,20	23,00	6,50
6,75	17,19	18,02	18,85	19,68	20,52	21,35	22,18	23,01	23,84	6,75
7	17,78	18,64	19,51	20,37	21,23	22,10	22,96	23,82	24,68	7
7,25	18,37	19,26	20,16	21,05	21,95	22,84	23,73	24,63	25,52	7,25
7,50	18,96	19,88	20,81	21,73	22,66	23,58	24,51	25,43	26,36	7,50
7,75	19,54	20,50	21,45	22,41	23,36	24,32	25,27	26,23	27,19	7,75
8	20,12	21,11	22,10	23,08	24,07	25,05	26,04	27,03	28,01	8
8,50	21,28	22,33	23,37	24,42	25,47	26,52	27,57	28,61	29,66	8,50
9	22,42	23,53	24,64	25,75	26,86	27,97	29,08	30,19	31,30	9
9,50	23,55	24,72	25,89	27,06	28,23	29,40	30,57	31,75	32,92	9,50
10	24,66	25,90	27,13	28,36	29,59	30,83	32,06	33,29	34,53	10
11	26,86	28,21	29,57	30,93	32,28	33,64	35,00	36,35	37,71	11
12	29,00	30,48	31,96	33,44	34,92	36,40	37,88	39,36	40,84	12
13	31,10	32,70	34,30	35,91	37,51	39,11	40,72	42,32	43,92	13
14	33,15	34,87	36,60	38,32	40,05	41,78	43,50	45,23	46,96	14
15	35,14	36,99	38,84	40,69	42,54	44,39	46,24	48,09	49,94	15
16	37,09	39,06	41,04	43,01	44,98	46,96	48,93	50,90	52,87	16
17	38,99	41,09	43,18	45,28	47,38	49,47	51,57	53,66	55,76	17
18	40,84	43,06	45,28	47,50	49,72	51,94	54,16	56,38	58,60	18
19	42,64	44,98	47,33	49,67	52,01	54,35	56,70	59,04	61,38	19
20	44,39	46,86	49,32	51,79	54,26	56,72	59,19	61,65	64,12	20

Weights for Precision Steel Tubes
kg/m

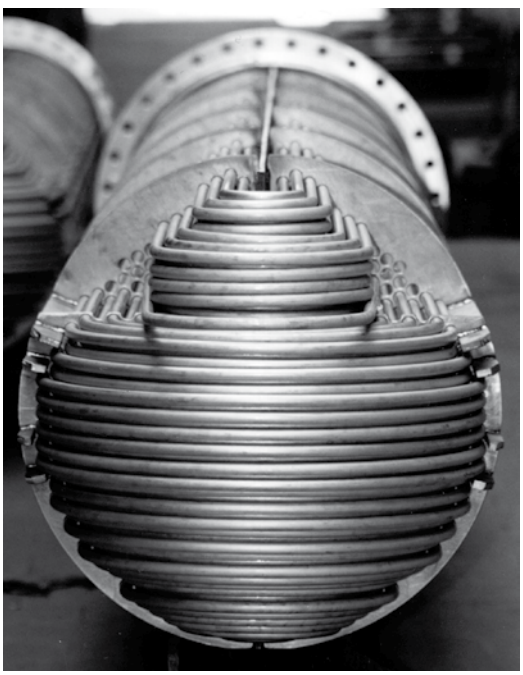
Wall	Outside diameter in mm										Wall
mm	155	160	165	170	175	180	185	190	195	200	mm
3	11,25	11,62	11,99	12,36	12,73	13,10	13,47	13,84	14,21	14,58	3
3,25	12,16	12,56	12,96	18,37	13,77	14,17	14,57	14,97	15,37	15,77	3,25
3,50	13,08	13,51	13,94	14,37	14,80	15,24	15,67	16,10	16,53	16,96	3,50
3,75	13,99	14,45	14,91	15,37	15,84	16,30	16,76	17,22	17,69	18,15	3,75
4	14,89	15,69	15,88	16,37	16,87	17,36	17,86	18,35	18,84	19,34	4
4,25	15,80	16,32	16,85	17,37	17,90	18,42	18,95	19,47	19,99	20,52	4,25
4,50	16,70	17,26	17,81	18,37	18,92	19,48	20,03	20,59	21,14	21,70	4,50
4,75	17,60	18,19	18,77	19,36	19,94	20,53	21,12	21,70	22,29	22,87	4,75
5	18,50	19,11	19,73	20,34	20,96	21,58	22,19	22,81	23,43	24,04	5
5,25	19,39	20,03	20,68	21,33	21,98	22,62	23,27	23,92	24,57	25,21	5,25
5,50	20,28	20,95	21,68	22,31	22,99	23,67	24,35	25,02	25,70	26,38	5,50
5,75	21,16	21,87	22,58	23,29	24,00	24,71	25,42	26,13	26,83	27,54	5,75
6	22,05	22,79	23,53	24,27	25,01	25,75	26,48	27,22	27,96	28,70	6
6,25	22,99	23,70	24,47	25,24	26,01	26,78	27,55	28,32	29,09	29,86	6,25
6,50	23,80	24,60	25,41	26,21	27,01	27,81	28,61	29,41	30,21	31,02	6,50
6,75	24,68	25,51	26,34	27,17	28,01	28,84	29,67	30,50	31,34	32,17	6,75
7	25,55	26,41	27,27	28,14	29,00	29,86	30,73	31,59	32,45	33,32	7
7,25	26,42	27,31	28,20	29,10	29,99	60,89	31,78	32,67	33,57	34,46	7,25
7,50	27,28	28,20	29,13	30,05	30,98	31,90	32,83	33,75	34,68	35,60	7,50
7,75	28,14	29,10	30,05	31,01	31,96	32,92	33,88	34,83	35,79	36,74	7,75
8	29,00	29,99	30,97	31,96	32,95	33,93	34,92	35,90	36,89	37,99	8
8,50	30,71	31,76	32,81	33,85	34,90	35,90	37,00	38,05	39,10	40,14	8,50
9	32,41	33,52	34,62	35,73	36,84	37,95	39,05	40,17	41,28	42,39	9
9,50	34,09	35,26	36,43	37,60	38,77	39,95	41,12	42,29	43,46	44,63	9,50
10	35,76	36,99	38,23	39,46	40,69	41,92	43,16	44,39	45,62	46,86	10
11	39,06	40,42	41,78	43,13	44,49	45,85	47,20	48,56	49,92	51,27	11
12	42,32	43,80	45,28	46,76	48,24	49,72	51,20	52,68	54,16	55,64	12
13	45,53	47,13	48,73	50,33	51,94	53,54	55,14	56,75	58,35	59,95	13
14	48,68	50,41	52,13	53,86	55,59	57,31	59,04	60,77	62,49	64,22	14
15	51,79	53,64	55,49	57,34	59,19	61,04	62,89	64,74	66,59	68,44	15
16	54,85	56,82	58,79	60,77	62,74	64,71	66,68	68,66	70,63	72,60	16
17	57,86	59,95	62,05	64,14	66,24	68,34	70,43	72,53	74,63	76,72	17
18	60,82	63,04	65,26	67,47	69,69	71,91	74,13	76,35	78,57	80,79	18
19	63,73	66,07	68,41	70,75	73,10	75,44	77,78	80,13	82,47	84,81	19
20	66,59	69,05	71,52	73,98	76,45	78,92	81,38	83,85	86,92	88,79	20

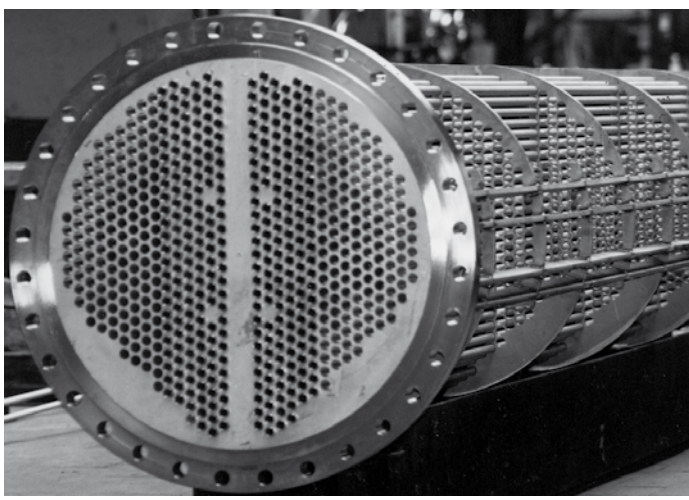
O.D		W.T.	I.D.	Grade	kg/m
4	x	0,5	3	St37.4	0,043
6	x	1	4	St37.4	0,123
		1,5	3	St37.4	0,166
		2	2	St37.4	0,197
		2,25	1,5	St37.4	0,208
7	x	1,5	4	St37.4	0,203
8	x	1	6	St37.4	0,173
		1,5	5	St37.4	0,240
10	x	1	8	St37.4	0,222
		1,5	7	St37.4	0,314
		2	6	St37.4	0,395
		2,5	5	St37.4	0,462
12	x	1	10	St37.4	0,271
		1,5	9	St37.4	0,388
		2	8	St37.4	0,493
14	x	1	12	St37.4	0,321
		1,5	11	St37.4	0,462
		2	10	St37.4	0,592
		2,5	9	St37.4	0,709
15	x	1	13	St37.4	0,345
		1,5	12	St37.4	0,499
		2	11	St37.4	0,641
		2,5	10	St37.4	0,771
		3	9	St37.4	0,888
16	x	1	14	St37.4	0,370
		1,5	13	St37.4	0,536
		2	12	St37.4	0,691
		2,5	11	St37.4	0,832
		3	10	St37.4	0,962
18	x	1	16	St37.4	0,419
		1,5	15	St37.4	0,610
		2	14	St37.4	0,789
		2,5	13	St37.4	0,956
		3	12	St37.4	
20	x	1,5	17	St37.4	0,684
		2	16	St37.4	0,888
		2,5	15	St37.4	

O.D		W.T.	I.D.	Grade	kg/m
20	x	3	14	St37.4	1,258
		4	12	St37.4	1,578
22	x	1	20	St37.4	0,518
		1,5	19	St37.4	0,758
		2	18	St37.4	0,986
		2,5	17	St37.4	0,758
		3	16	St37.4	0,986
		3,5	15	St37.4	1,597
24	x	1	22	St37.4	0,567
		2	20	St37.4	1,085
25	x	1,5	22	St37.4	0,869
		2	21	St37.4	1,134
		2,5	20	St37.4	1,387
		3	19	St37.4	1,628
		4	17	St37.4	2,072
28	x	1,5	25	St37.4	0,980
		2	24	St37.4	1,282
		2,5	23	St37.4	1,572
		3	22	St37.4	1,854
30	x	1,5	27	St37.4	1,054
		2	26	St37.4	1,381
		2,5	25	St37.4	1,695
		3	24	St37.4	1,998
		4	22	St37.4	2,565
32	x	2,5	27	St37.4	1,819
		3	26	St37.4	2,146
35	x	2	31	St37.4	1,628
		2,5	30	St37.4	2,004
		3	29	St37.4	2,367
38	x	2,5	33	St37.4	2,189
		3	32	St37.4	2,589
		4	30	St37.4	3,354
		5	28	St37,4	4,069
42	x	2	38	St37,4	1,973
		3	36	St37,4	2,885
		5	32	St37,4	4,562
50	x	6	38	St37,4	6,511

Dimensions and weight of Stainless Steel Boiler and Heat Exchanger Tubes

O.D.	Wall Thickness																		Unit: kg/m
mm / mm	1,2	1,6	2,0	2,3	2,6	2,9	3,2	3,5	4,0	4,5	5,0	5,5	6,0	6,5	7,0	8,0	9,5	11,0	12,5
15,9	0,435	0,564	0,686	0,771	0,853	0,930													
19,0	0,527	0,687	0,838	0,947	1,050	1,150													
21,7	0,607	0,793	0,972	1,100	1,220	1,340	1,460												
25,4	0,716	0,939	1,150	1,310	1,460	1,610	1,750	1,890											
27,2	0,769	1,010	1,240	1,410	1,580	1,740	1,890	2,050	2,290										
31,8	0,905	1,190	1,470	1,670	1,870	2,070	2,260	2,440	2,740	3,030									
34,0		1,280	1,580	1,800	2,010	2,220	2,430	2,630	2,960	3,270	3,580								
38,1		1,440	1,780	2,030	2,280	2,520	2,750	2,990	3,360	3,730	4,080	4,420							
42,7			2,010	2,290	2,570	2,850	3,120	3,380	3,820	4,240	4,650	5,050	5,430						
45,0			2,120	2,420	2,720	3,010	3,300	3,580	4,040	4,490	4,930	5,360	5,770	6,170					
48,6			2,300	2,630	2,950	3,270	3,580	3,890	4,400	4,890	5,380	5,850	6,300	6,750	7,180				
50,8			2,410	2,750	3,090	3,430	3,760	4,080	4,620	5,140	5,650	6,140	6,630	7,100	7,560	8,440	9,680	10,800	11,800
54,0			2,560	2,930	3,300	3,650	4,010	4,360	4,930	5,490	6,040	6,580	7,100	7,630	8,110	9,070	10,400	11,700	12,800
57,1			2,720	3,110	3,490	3,880	4,250	4,630	5,240	5,840	6,420	7,000	7,560	8,110	8,650	9,690	11,600	12,500	13,700
60,3			2,880	3,290	3,700	4,100	4,510	4,900	5,550	6,190	6,820	7,430	8,030	8,620	9,200	10,300	11,900	13,400	14,700
63,5				3,470	3,900	4,330	4,760	5,180	5,870	6,550	7,210	7,870	8,510	9,140	9,750	10,900	12,700	14,200	15,700
65,0				3,560	4,000	4,440	4,880	5,310	6,020	6,710	7,400	8,070	8,700	9,380	10,000	11,200	13,000	14,600	16,200
70,0				3,840	4,320	4,800	5,270	5,740	6,510	7,270	8,010	8,750	9,470	10,200	10,900	12,200	14,200	16,000	17,700
76,2				4,190	4,720	5,240	5,760	6,270	7,120	7,960	8,780	9,590	10,400	11,200	11,900	13,500	15,600	17,700	19,600
82,6							6,270	6,830	7,750	8,670	9,570	10,500	11,300	12,200	13,000	14,700	17,100	19,400	21,600
88,9							6,760	7,370	8,370	9,370	10,300	11,300	12,300	13,200	14,100	16,000	18,600	21,100	23,600
101,6								8,470	9,630	10,800	11,900	13,000	14,100	15,200	16,300	18,500	21,600	24,600	27,500
114,3									10,900	12,200	13,500	14,800	16,000	17,300	18,500	21,000	24,600	28,000	31,400
127,0									12,100	13,600	15,000	16,500	17,900	19,300	20,700	23,500	27,500	31,500	35,300
139,8												18,200	19,800	21,400	22,900	26,000	30,500	34,900	39,200





Dimension and weight of Stainless Steel Pipe

Designation of diameter		Outside diameter	Designation of wall thickness													
			Schedult 5S		Schedule 10S		Schedule 20S		Schedule 40		Schedule 80		Schedule 120		Schedule 160	
(A)	(B)	mm	Wall thickness mm	Weight kg/m	Wall thickness mm	Weight kg/m	Wall thickness mm	Weight kg/m	Wall thickness mm	Weight kg/m	Wall thickness mm	Weight kg/m	Wall thickness mm	Weight kg/m	Wall thickness mm	Weight kg/m
6	1/8	10,5	1,0	0,234	1,2	0,275	1,5	0,333	1,7	0,369	2,4	0,479	-	-	-	-
8	1/4	13,8	1,2	0,373	1,65	0,494	2,0	0,582	2,2	0,629	3,0	0,799	-	-	-	-
10	3/8	17,3	1,2	0,476	1,65	0,637	2,0	0,755	2,3	0,851	3,2	1,11	-	-	-	-
15	1/2	21,7	1,65	0,816	2,1	1,02	2,5	1,18	2,8	1,31	3,7	1,64	-	-	4,7	1,97
20	3/4	27,2	1,65	1,04	2,1	1,30	2,5	1,52	2,9	1,74	3,9	2,24	-	-	5,5	2,94
25	1	34,0	1,65	1,32	2,8	2,15	3,0	2,29	3,4	2,57	4,5	3,27	-	-	6,4	4,36
32	1 1/4	42,7	1,65	1,67	2,8	2,76	3,0	2,94	3,6	3,47	4,9	4,57	-	-	6,4	5,73
40	1 1/2	48,6	1,65	1,91	2,8	3,16	3,0	3,37	3,7	4,10	5,1	5,47	-	-	7,1	7,29
50	2	60,5	1,65	2,39	2,8	3,98	3,5	4,92	3,9	5,44	5,5	7,46	-	-	8,7	11,1
65	2 1/2	76,3	2,1	3,84	3,0	5,42	3,5	6,28	5,2	9,12	7,0	12,0	-	-	9,5	15,6
80	3	89,1	2,1	4,51	3,0	6,37	4,0	8,39	5,5	11,3	7,6	15,3	-	-	11,1	21,4
90	3 1/2	101,6	2,1	5,15	3,0	7,29	4,0	9,63	5,7	13,5	8,1	18,7	-	-	12,7	27,8
100	4	114,3	2,1	5,81	3,0	8,23	4,0	10,9	6,0	16,0	8,6	22,4	11,1	28,2	13,5	33,6
125	5	139,8	2,8	9,46	3,4	11,40	5,0	16,6	6,6	21,7	9,5	30,5	12,7	39,8	15,9	48,6
150	6	165,2	2,8	11,2	3,4	13,60	5,0	19,8	7,1	27,7	11,0	41,8	14,3	53,2	18,2	66,0
200	8	216,3	2,8	14,7	4,0	20,90	6,5	33,6	8,2	42,1	12,7	63,8	18,2	88,9	23,0	110
250	10	267,4	3,4	22,1	4,0	26,00	6,5	41,8	9,3	59,2	15,1	93,9	21,4	130	28,6	168
300	12	318,5	4,0	31,0	4,5	34,80	6,5	50,0	10,3	78,3	17,4	129	25,4	184	33,3	234

TPS TECHNITUBE RÖHRENWERKE GMBH

JIS Sizes combined
G3456/3458/3460/3454

	Schedule 30		Schedule 40				Schedule 60			
Thickness	Approx. Weight		Wall Thickness		Approx. Thickness		Wall Thickness		Approx. Thickness	
mm	lbs/ft	kg/m	in	mm	lbs/ft	kg/m	in	mm	lbs/ft	kg/m
-	-	-	0,067	1,7	0,248	0,369	0,087	2,2	0,303	0,450
-	-	-	0,087	2,2	0,423	0,629	0,094	2,4	0,454	0,675
-	-	-	0,091	2,3	0,572	0,851	0,110	2,8	0,673	1,00
-	-	-	0,110	2,8	0,881	1,31	0,126	3,2	0,982	1,42
-	-	-	0,114	2,9	1,17	1,74	0,134	3,4	1,35	2,00
-	-	-	0,134	3,4	1,73	2,57	0,153	3,9	1,94	2,89
-	-	-	0,142	3,6	2,33	3,47	0,177	4,5	2,85	4,24
-	-	-	0,146	3,7	2,76	4,10	0,177	4,5	3,29	4,89
-	-	-	0,153	3,9	3,66	5,44	0,193	4,9	4,52	6,72
-	-	-	0,205	5,2	6,13	9,12	0,236	6,0	6,99	10,4
-	-	-	0,216	5,5	7,60	11,3	0,260	6,6	9,01	13,4
-	-	-	0,224	5,7	9,08	13,5	0,276	7,0	11,0	16,3
-	-	-	0,236	6,0	10,8	16,0	0,279	7,1	12,6	18,8
-	-	-	0,260	6,6	14,6	21,7	0,319	8,1	17,7	26,3
-	-	-	0,279	7,1	18,6	27,7	0,366	9,3	24,1	35,8
7,0	24,3	36,1	0,323	8,2	28,3	42,1	0,406	10,3	35,2	52,3
7,8	33,5	49,9	0,366	9,3	39,8	59,2	0,500	12,7	53,7	79,8
8,4	43,2	64,2	0,405	10,3	52,7	78,3	0,563	14,3	71,9	107,0
9,5	54,5	81,1	0,437	11,1	63,4	94,3	0,594	15,1	85,4	127,0
9,5	62,5	63,0	0,500	12,7	82,7	123,0	0,657	16,7	107,6	160,0
11,1	82,0	122,0	0,563	14,3	104,9	156,0	0,748	19,0	137,9	205,0
12,7	104,2	155,0	0,594	15,1	123,7	184,0	0,811	20,6	166,8	248,0

	Schedule 120		Schedule 140				Schedule 160			
Thickness	Approx. Weight		Wall Thickness		Approx. Thickness		Wall Thickness		Approx. Thickness	
mm	lbs/ft	kg/m	in	mm	lbs/ft	kg/m	in	mm	lbs/ft	kg/m
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	0,185	4,7	1,32	1,97
-	-	-	-	-	-	-	0,216	5,5	1,98	2,94
-	-	-	-	-	-	-	0,252	6,4	2,93	4,36
-	-	-	-	-	-	-	0,252	6,4	3,85	5,73
-	-	-	-	-	-	-	0,279	7,1	4,89	7,27
-	-	-	-	-	-	-	0,342	8,7	7,46	11,1
-	-	-	-	-	-	-	0,374	9,5	10,4	15,6
-	-	-	-	-	-	-	0,437	11,1	14,4	21,4
-	-	-	-	-	-	-	0,500	12,7	18,7	27,8
11,1	19,0	28,2	-	-	-	-	0,531	13,5	22,6	33,6
12,7	26,8	39,8	-	-	-	-	0,626	15,9	32,7	48,6
14,3	35,8	53,2	-	-	-	-	0,716	18,2	44,4	66,0
18,2	59,8	88,9	0,811	20,6	66,8	99,4	0,905	23,0	74,0	110,0
21,4	87,4	130,0	1,000	25,4	102,2	152,0	1,126	28,6	113,0	168,0
25,4	123,7	184,0	1,126	28,6	137,2	204,0	1,311	33,3	157,4	234,0
27,8	151,3	225,0	1,252	31,8	170,8	254,0	1,405	35,7	189,6	282,0
30,9	192,3	286,0	1,437	36,5	223,9	333,0	1,594	40,5	245,5	365,0
34,9	244,1	363,0	1,563	39,7	275,0	409,0	1,779	45,2	308,7	459,0
38,1	296,6	441,0	0,748	44,4	341,6	508,0	1,968	50,0	380,0	565,0

JIS Sizes combined
G3456/4358/3460/3454

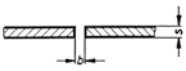
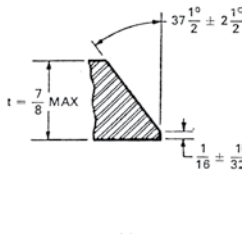
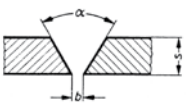
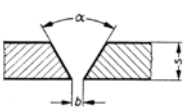
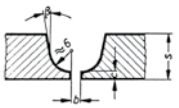
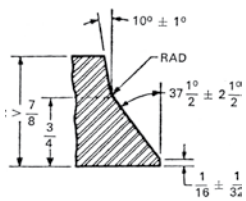
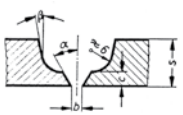
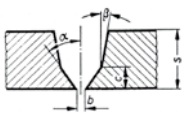
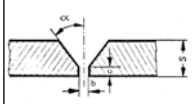
NOMINAL PIPE SIZE	OUTSIDE DIAMETER		Schedule 10				Schedule 20				
			Wall Thickness		Approx. Weight		Wall Thickness		Approx. Weight		Wall
in	in	mm	in	mm	lbs/ft	kg/m	in	mm	lbs/ft	kg/m	in
1/8	0,413	10,5	-	-	-	-	-	-	-	-	-
1/4	0,543	13,8	-	-	-	-	-	-	-	-	-
3/8	0,681	17,3	-	-	-	-	-	-	-	-	-
1/2	0,854	21,7	-	-	-	-	-	-	-	-	-
3/4	1,07	27,2	-	-	-	-	-	-	-	-	-
1	1,34	34,0	-	-	-	-	-	-	-	-	-
11/4	1,68	42,7	-	-	-	-	-	-	-	-	-
11/2	1,91	48,6	-	-	-	-	-	-	-	-	-
2	2,38	60,5	-	-	-	-	0,126	3,2	3,039	4,52	-
21/2	3,00	76,3	-	-	-	-	0,177	4,5	5,360	7,97	-
3	3,51	89,1	-	-	-	-	0,177	4,5	6,315	9,39	-
31/2	4,00	101,6	-	-	-	-	0,177	4,5	7,263	10,8	-
4	4,50	114,3	-	-	-	-	0,193	4,9	8,877	13,2	-
5	5,50	139,8	-	-	-	-	0,201	5,1	11,37	16,9	-
6	6,50	165,2	-	-	-	-	0,217	5,5	14,59	21,7	-
8	8,52	216,3	-	-	-	-	0,252	6,4	22,2	33,1	0,276
10	10,53	267,4	-	-	-	-	0,252	6,4	27,7	41,2	0,307
12	12,54	318,5	-	-	-	-	0,252	6,4	33,1	49,3	0,331
14	14,00	355,6	0,252	6,4	37,0	55,1	0,311	7,9	45,5	67,7	0,374
16	16,00	406,4	0,252	6,4	42,4	63,1	0,311	7,9	52,2	77,6	0,374
18	18,00	457,2	0,252	6,4	48,2	71,7	0,311	7,9	58,8	87,5	0,437
20	20,00	508,0	0,252	6,4	53,3	79,2	0,374	9,5	78,7	117	0,500

NOMINAL PIPE SIZE	OUTSIDE DIAMETER		Schedule 80				Schedule 20				
			Wall Thickness		Approx. Weight		Wall Thickness		Approx. Weight		Wall
in	in	mm	in	mm	lbs/ft	kg/m	in	mm	lbs/ft	kg/m	in
1/8	0,413	10,5	0,094	2,4	0,322	0,479	-	-	-	-	-
1/4	0,543	13,8	0,118	3,0	0,537	0,799	-	-	-	-	-
3/8	0,681	17,3	0,126	3,2	0,746	1,11	-	-	-	-	-
1/2	0,854	21,7	0,146	3,7	1,10	1,64	-	-	-	-	-
3/4	1,07	27,2	0,153	3,9	1,51	2,24	-	-	-	-	-
1	1,34	34,0	0,177	4,5	2,20	3,27	-	-	-	-	-
1 1/4	1,68	42,7	0,193	4,9	3,07	4,57	-	-	-	-	-
1 1/2	1,91	48,6	0,201	5,1	3,68	5,47	-	-	-	-	-
2	2,38	60,5	0,216	5,5	5,02	7,46	-	-	-	-	-
2 1/2	3,00	76,3	0,276	7,0	8,07	12,0	-	-	-	-	-
3	3,51	89,1	0,299	7,6	10,3	15,3	-	-	-	-	-
3 1/2	4,00	101,6	0,319	8,1	12,6	18,7	-	-	-	-	-
4	4,50	114,3	0,338	8,6	15,1	22,4	-	-	-	-	0,437
5	5,50	139,8	0,374	9,5	20,5	30,5	-	-	-	-	0,500
6	6,50	165,2	0,433	11,0	28,1	41,8	-	-	-	-	0,563
8	8,52	216,3	0,500	12,7	42,9	63,8	0,594	15,1	50,4	74,6	0,716
10	10,53	267,4	0,594	15,1	63,1	93,9	0,716	18,2	75,3	112	0,842
12	12,54	318,5	0,685	17,4	86,7	129,0	0,842	21,4	105,6	157	1,000
14	14,00	355,6	0,748	19,0	106,2	158,0	0,937	23,8	131,1	195	1,094
16	I6,00	406,4	0,842	21,4	136,5	203,0	1,031	26,2	165,4	246	1,216
18	18,00	457,2	0,937	23,8	170,8	254,0	1,157	29,4	208,5	310	1,374
20	20,00	508,0	1,031	26,2	209,1	311,0	1,279	32,5	256,2	381	1,500

Dimensions and weights (black and galvanized)

Nominal Pipe Size	Outside diameter	Approx. Wall Thickness	Approximate Weight						Number of Threads
			Plain End			Treads and Coupling			
in		mm	lbs/ft	kg/m	kg/ft	lbs/ft	kg/m	kg/ft	per Inch
* 1/8	10,5	2,0	0,282	0,419	0,128	0,284	0,423	0,129	28,00
* 1/4	13,8	2,3	0,438	0,652	0,199	0,443	0,659	0,201	19,00
3/8	17,3	2,3	0,572	0,851	0,259	0,579	0,862	0,263	19,00
1/2	21,7	2,8	0,880	1,31	0,399	0,887	1,32	0,402	14,00
3/4	27,2	2,8	1,14	1,69	0,515	1,15	1,71	0,521	14,00
1	34,0	3,2	1,63	2,43	0,741	1,67	2,48	0,756	11,00
1 1/4	42,7	3,5	2,27	3,38	1,03	2,33	3,47	1,06	11,00
1 1/2	48,6	3,5	2,61	3,89	1,19	2,68	3,99	1,22	11,00
2	60,5	3,8	3,57	5,31	1,62	3,69	5,49	1,67	11,00
2 1/2	76,3	4,2	5,02	7,47	2,28	5,21	7,75	2,36	11,00
3	89,1	4,2	5,91	8,79	2,68	6,15	9,15	2,79	11,00
3 1/2	101,6	4,2	6,79	10,1	3,08	7,12	10,6	3,23	11,00
4	114,3	4,5	8,20	12,2	3,72	8,60	12,8	3,90	11,00
5	139,8	4,5	10,1	15,0	4,57	10,7	15,9	4,85	11,00
6	165,2	5,0	13,3	19,8	6,04	14,1	21,0	6,40	11,00
7	190,7	5,3	16,3	24,2	7,38	17,3	25,8	7,86	11,00
8	216,3	5,8	20,2	30,1	9,17	21,6	32,1	9,78	11,00
9	241,8	6,2	24,2	36,0	11,0	25,7	38,3	11,7	11,00
10	267,4	6,6	28,5	42,4	12,9	30,4	45,2	13,8	11,00
12	318,5	6,9	35,6	53,0	16,2	38,2	56,8	17,3	11,00
14	355,6	7,9	45,5	67,7	20,6	-	-	-	-

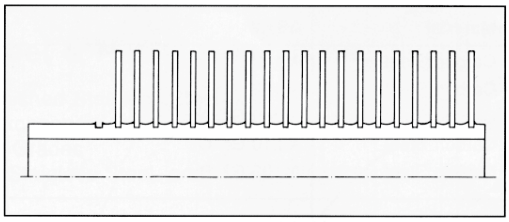
Note:
*Furnished on special order.
The permissible variation in weight is 10%.
Galvanized pipe weights are heavier approximately by 6% than black pipe.
The permissible variation in outside diameter is 0.5 mm for pipe furnished threaded or plain end with outside diameter 48.6 mm and under, 0.5 mm for threaded pipe with 60.5 mm O.D., 0.7 for 76.3 mm, 0.8 mm for 89.1 mm and up to 165.2 mm, 0.9 mm for 190.7, 0.1 mm for 216.3 mm, 1.2 mm for 241.8, 1.3 mm for 267.4 mm, 1.5 mm for 318.5 mm. and 1 % for plain end pipe with outside diameter 60.5 mm and up to 355.6 mm.
Taper of thread is 3/4 inches per foot, measured on diameter.
Furnished with threads and coupling and in random lengths from 12 feet to 22 feet, unless otherwise specified.
The weight per foot of pipe with threads and coupling is based on a length of 5 meters.

Form	Desig-nation	Symbol	Sectional View	Wall Thickness (s)	Measures Angle α	Angle β	Dis-tance (b)	Root Face (c)	Buttwelding Ends ANSI - B16.25
DIN 2559 1	I-seam			≤ 3 mm ≤ 0.118 in.	-	-	0 to 3 mm 0 to 0.118 in.	- -	 (a) Plain Bevel
DIN 2559 21	V-seam			≤ 16 mm ≤ 0.630 in.	40 to 60°	-	0 to 3 mm 0 to 0.118 in.	- -	
DIN 2559 22	V-seam			≤ 16 mm ≤ 0.630 in.	40 to 60°	-	0 to 4 mm 0 to 0.157 in.	to 2 mm to 0.079 in.	
DIN 2559 3	U-seam			≥ 12 mm ≥ 0.472 in.	-	8°	0 to 3 mm 0 to 0.118 in.	2 mm 0.079 in.	
DIN 2559 4	U-seam on V-seam			≥ 12 mm ≥ 0.472 in.	60°	8°	0 to 3 mm 0 to 0.118 in.	- -	Nominal Pipe Wall Thickness / End Preparation Less than v* / Cut square or slightly cham fer, at mfr's option v* to 7/8 incl. / Plain bevel as in sketch "a" above More than 7/8 / Combound bevek as in sketch "b" above
DIN 25559 5	V-seam on V-root			≥ 16 mm ≥ 0.630 in.	≈ 35°	≈ 6°	0 to 2 mm 0 to 0.079 in.	≈ 6 mm ≈ 0.236 in.	
									v* = 3/16" for carbon steel, ferritic alloy steel or wrought iron; 1/8" for austenitic alloy steel
API Std 5 L/ 5 LX	-			≥ 19 mm ≥ 0.750 in.	30° +5 - 0°		0 to 4 mm 0 to 0.157 in.	≈ 1.6 mm ≈ 0.063 in.	Basic welding bevel for all compo-nents (without backing ring, or with split backing ring)

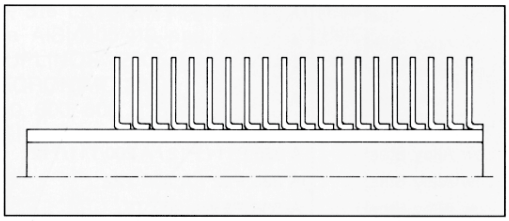
Description of available types of TECHNIFIN® Tubes

TECHNIFIN® TYPE „G“
The fin strip is wound into a mechanically produced groove and tightened by backfilling of the base material under pressure. Groove depth appr. 0,4 mm.

Advantages: High fin stability, excellent heat transfer, high operating temperature.

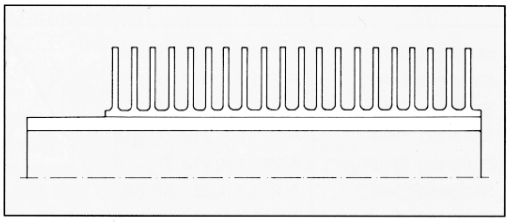


TECHNIFIN® TYPE „L“, „KL“, „DL“
The fin strip is shaped into a „L“ and wound onto the tube surface under tension.
Advantages: Core tube extensively protected against corrosion by the fin foot, finning of very thin-walled tubes possible.

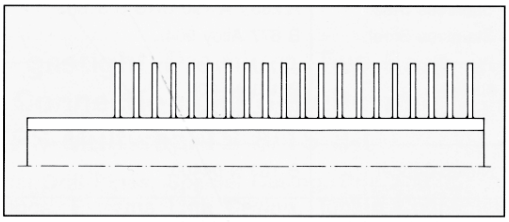


TECHNIFIN® TYPE „HY“
A smooth core tube is inserted into an aluminium tube and then fins are extrudes out of the aluminium tube. Advantages: Bond ot outer and inner tube removes the risk of loss of contact due to thermal stress, fins are more rigid, also available as serrated type TECHNIFIN „HYS“ see below. Core tube extensively protected against corrosion by the aluminium sleeve.

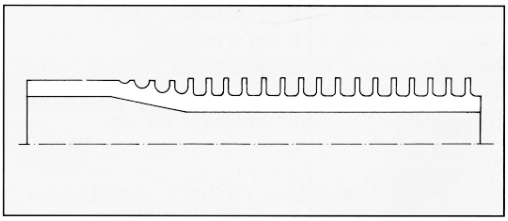
TECHNIFIN® TYPE „HYS“
As per type „HY“, but fins are serrated. Advantages: Higher heat transfer coefficient, for same pressure drop compared with „HY“ fin.



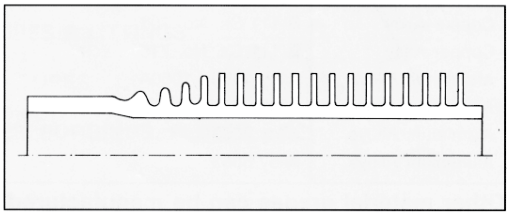
TECHNIFIN® TYPE „I“
The fin strip is tension wound onto the base tube.
Typical fin materials: carbon steel, stainless steel, copper, brass and copper-nickel



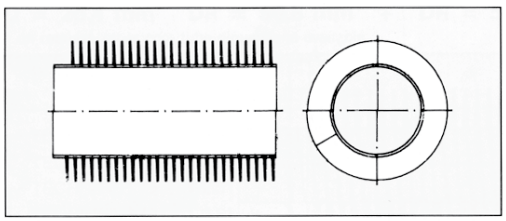
TECHNIFIN® TYPE „N“
The fins are rolled out of the wall of the plain tube. Tube and fin are consisting of one piece.
Advantages: Excellent heattransfer, good bending properties, wide range of material can be used.



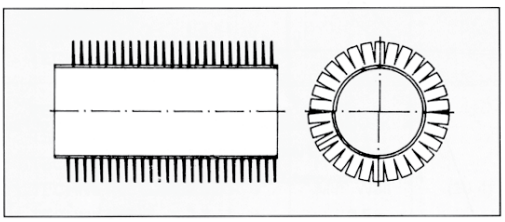
TECHNIFIN® TYPE „M“
Manufacturing and advantages as described for type „N“ but with higher fins.



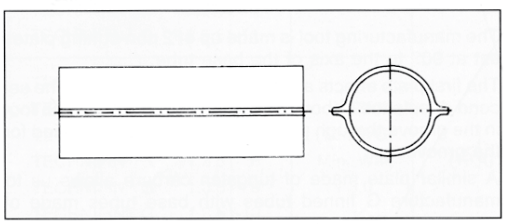
Description of available types of TECHNIFIN® Tubes



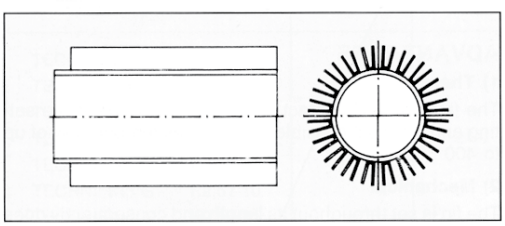
TECHNIFIN® TYPE „WO“
The fin strip is wound spirally onto the tube and welded continuously to the tube along the spiral root.
Advantages: Strong connection between fin and base tube, prevents loosening of fins because of heat stress, oxidization, corrosion etc., use at very high temperatures possible.



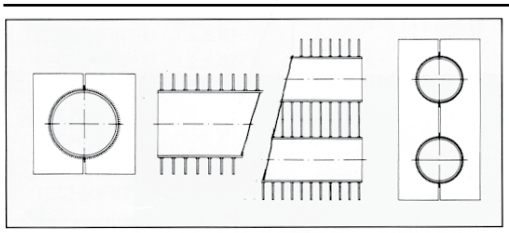
TECHNIFIN® TYPE „WOS“
As per type „WO“, but fins are serrated. Advantages: Higher heat transfer coefficient. For the same pressure drop compared with „WO“ fin.



TECHNIFIN® TYPE „LFS“
Extruded or drawn fin tube , seamless with two longitudinal opposite fins. Used in boiler wall constructions.
Advantage compared to standard boiler wall construction as no steel strip required only one weld nessesary to connect 2 tubes.

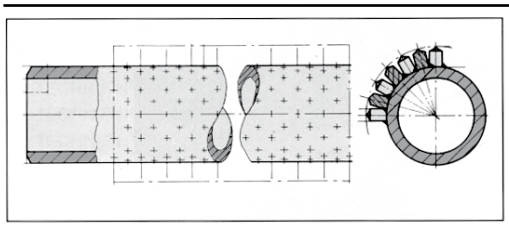


TECHNIFIN® TYPE „LFW“
I/L or U fins welded longitudinally onto the base tube.
Also U-Bend execution possible

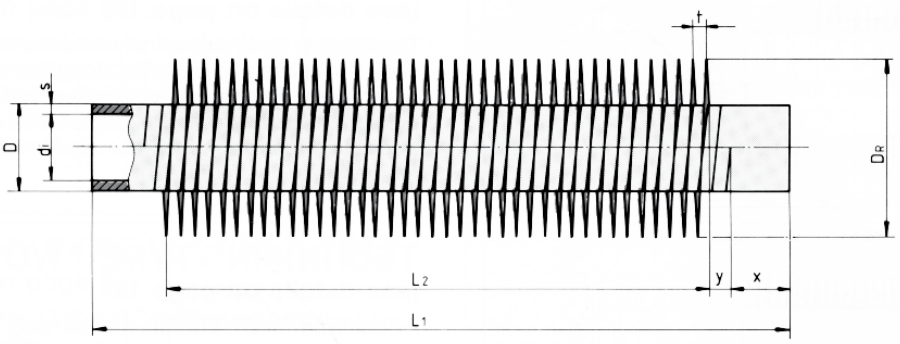


TECHNIFIN® TYPE „S“
Square fins are welded onto a round base tube.

TECHNIFIN® TYPE „Double S“
Square fins are welded onto two round base tubes.



TECHNISTUD®
Steel studs are welded onto the base tube.



L_1 max. = 12 000 mm
L_2 max. = L1 -2y
Y max. = 4 x t

Fin Thickness = 0,3 - 0,4 mm
x = acc. to clients specification

Fa = Outer Tube Surface Area incl. Surface Area of Fins
Fi = Interior Tube Surface Area per Meter (m2/m)
F_{ZR} = Uncovered Tube Area between the fins

MATERIAL COMBINATIONS

Core Tube

Carbon steels, low-alloy steels, stainless steels, brass, copper, copper-nickel alloys, aluminium bronze, nickel-alloys (Alloy 400, etc.), bimetal, titanium and others.

Fins

Aluminium / Steel / Galvanized Steel

FIELDS OF APPLICATION

- the petroleum, chemical and petrochemical industries
- natural gas treatment
- the steel industry: blast furnace and converter systems
- power generation: steam turbine exhaust condensing
  - contact condensing with cooling of circulating condensate
  - fossil and nuclear power plants
- air conditioning (freon, ammonia, propane)
- incineration of household refuse
- compressor coolers, ect.

MANUFACTURING PROCESS

The manufacturing tool is made up of 2 non-cutting plates set at 90° to the axis of the base tube.
The first plate effects a groove for metal spinning. The second directs the ribbon in the groove and sets the fin foot in the groove through pressure on the metal displaced for the groove.
A similar plate made of tungsten carbure allows us to manufacture G finned tubes with base tubes made of austenitic steel or exotic alloys.

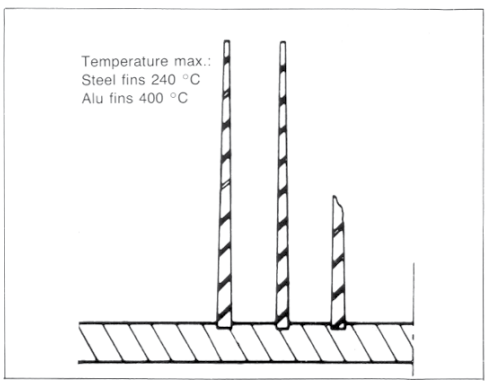
ADVANTAGES

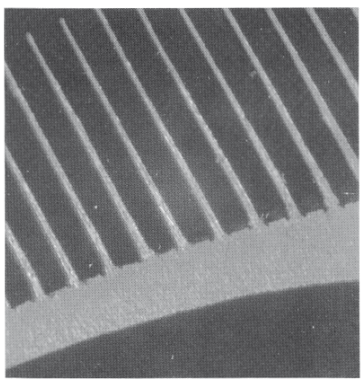
1) Thermal

The fin/tube wall contact is constant because of the setting and makes it possible to use a wall temperature of up to 400° C.

2) Mechanical

The fin is set throughout its length and consequently does not unwind even when partially uprooted.



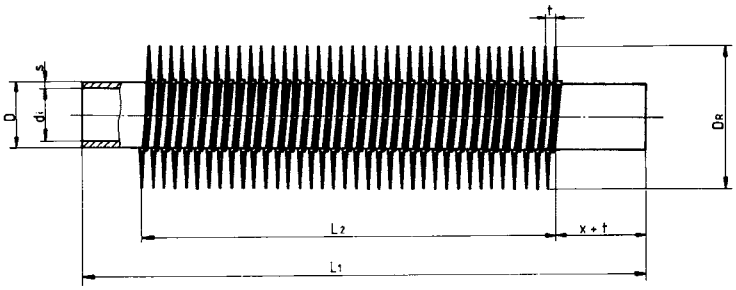


D = 25,4 mm* DR = 50,8 mm +DR = 57 mm
* on request, other core tube dimensions available

ORDER-No.	s mm	di mm	Fins/in.	Fa m²/m	Fa/Fi	Weight Kg/m	FZR m²/m
TECHNIFIN® G 1.2.51- 5			5	0,678	10,09	1,51	0,0234
TECHNIFIN® G 1.2.51- 6			6	0,798	11,87	1,58	0,0230
TECHNIFIN® G 1.2.51- 7			7	0,918	13,65	1,65	0,0226
TECHNIFIN® G 1.2.51- 8	2	21,4	8	1,037	15,43	1,72	0,0222
TECHNIFIN® G 1.2.51- 9			9	1,157	17,21	1,79	0,0218
TECHNIFIN® G 1.2.51-10			10	1,277	18,99	1,85	0,0214
TECHNIFIN® G 1.2.51-11			11	1,396	20,77	1,94	0,0210
TECHNIFIN® G 1.2,5.51- 5			5	0,678	10,58	1,76	0,0234
TECHNIFIN® G 1.2,5.51- 6	2,11		6	0,798	12,45	1,83	0,0230
TECHNIFIN® G 1.2,5.51- 7	(14 BWG)		7	0,918	14,32	1,90	0,0226
TECHNIFIN® G 1.2,5.51- 8	Min. Wall	(20,4)	8	1,037	16,19	1,98	0,0222
TECHNIFIN® G 1.2,5.51- 9	-2,5		9	1,157	18,05	2,05	0,0218
TECHNIFIN® G 1.2,5.51-10			10	1,277	19,92	2,11	0,0214
TECHNIFIN® G 1.2,5.51-11			11	1,396	21,79	2,19	0,0210
TECHNIFIN® G 1.3.51- 5			5	0,678	11,13	2,01	0,0234
TECHNIFIN® G 1.3.51- 6	2,77		6	0,798	13,09	2,08	0,0230
TECHNIFIN® G 1.3.51- 7	(12 BWG)		7	0,918	15,06	2,15	0,0226
TECHNIFIN® G 1.3.51- 8	Min. Wall	(19,4)	8	1,037	17,02	2,22	0,0222
TECHNIFIN® G 1.3.51- 9	-3,0		9	1,157	18,98	2,29	0,0218
TECHNIFIN® G 1.3.51-10			10	1,277	20,95	2,36	0,0214
TECHNIFIN® G 1.3.51-11			11	1,396	22,91	2,44	0,0210
TECHNIFIN® G 1.2.57- 5			5	0,885	13,16	1,65	0,0291
TECHNIFIN® G 1.2.57- 6			6	1,046	15,56	1,73	0,0286
TECHNIFIN® G 1.2.57- 7			7	1,207	17,95	1,82	0,0281
TECHNIFIN® G 1.2.57- 8	2	21,4	8	1,368	20,35	1,92	0,0276
TECHNIFIN® G 1.2.57- 9			9	1,529	22,74	2,01	0,0271
TECHNIFIN® G 1.2.57-10			10	1,690	25,14	2,11	0,0266
TECHNIFIN® G 1.2.57-11			11	1,851	27,53	2,20	0,0261
TECHNIFIN® G 1.2,5.57- 5			5	0,885	13,81	1,89	0,0291
TECHNIFIN® G 1.2,5.57- 6	2,11		6	1,046	16,32	1,99	0,0286
TECHNIFIN® G 1.2,5.57- 7	(14 BWG)		7	1,207	18,83	2,08	0,0281
TECHNIFIN® G 1.2,5.57- 8	Min. Wall	(20,4)	8	1,368	21,35	2,18	0,0276
TECHNIFIN® G 1.2,5.57- 9	-2,5		9	1,529	23,86	2,27	0,0271
TECHNIFIN® G 1.2,5.57- 10			10	1,690	26,37	2,37	0,0266
TECHNIFIN® G 1.2,5.57- 11			11	1,851	28,88	2,46	0,0261
TECHNIFIN® G 1.3.57- 5			5	0,885	14,42	2,14	0,0291
TECHNIFIN® G 1.3.57- 6	2,77		6	1,046	17,16	2,23	0,0286
TECHNIFIN® G 1.3.57- 7	(12 BWG)		7	1,207	19,80	2,33	0,0281
TECHNIFIN® G 1.3.57- 8	Min. Wall	(19,4)	8	1,368	22,45	2,42	0,0276
TECHNIFIN® G 1.3.57- 9	-3,0		9	1,529	25,09	2,52	0,0271
TECHNIFIN® G 1.3.57-10			10	1,690	27,73	2,61	0,0266
TECHNIFIN® G 1.3.57-11			11	1,851	30,37	2,71	0,0261

Given weights are for steel tubes with Aluminium fins. Weight calculation for steel fins:
Kg/m ≈ weight of table + 0,1827 x fins per inch.

(Base tubes from 12,7 mm OD (½“) up to 38,1 mm (1½“) possible with different fin caracteristics.)



L_1 max. = 12 000 mm
L_2 max. = L1 -2t

Fin Thickness = 0,3 - 0,4 mm
x = acc. to clients specification

Fa = Outer Tube Surface Area incl. Surface Area of Fins
Fi = Interior Tube Surface Area per Meter (m2/m)
F_{ZR} = Uncovered Tube Area between the fins

MATERIAL COMBINATIONS

Core Tube

Carbon steels low-alloy steels, stainless steels, brass, copper, copper-nikkel alloys, aluminium bronze, nickel-alloys(Alloy 400, ext.), bimetal, titanium and others

Fins

Aluminium

FIELDS OF APPLICATION

- the petroleum, chemical and petrochemical process industries
- natural gas treatment
- the steel industry: blast furnace and converter systems
- power generation: steam turbine exhaust condensing
  - contact condensing with cooling of circulating condensate
  - fossil and nuclear power plants
- air conditioning (freon, ammonia, propane)
- incineration of household refuse
- compressor coolers, ect.

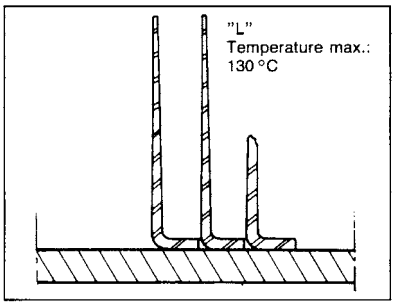
MANUFACTURING PROCESS

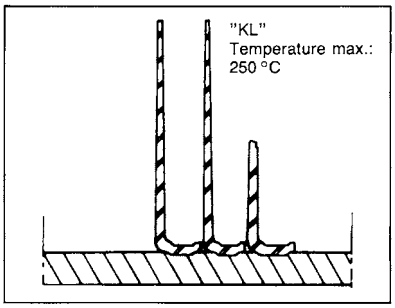
The manufacturing strip is folded to from an L shape and then wound around the base tube. The feet of the fins are joined together and cover the whole of the finned surface. Both lends are clamped down to avoid unrolling through damage.

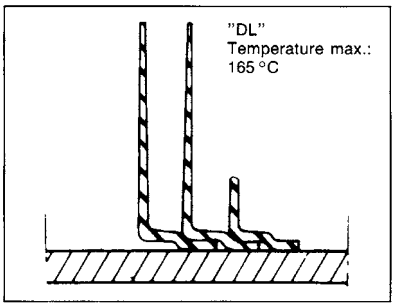
ADVANTAGES

Economic

This method of manufacturing enables us to place the finning on a very thin-walled tube with is particularly desirable when using noble alloys (titanium, stainless, copper, nickel).
The tube can withstand a temperature of up to 130°C without the risk of atmospheric corrosion or thermal stress.







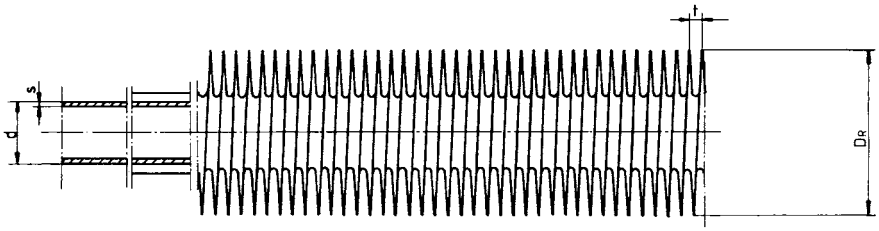
D = 25,4 mm* **DR = 50,8mm + DR = 57 mm**

* on request, other core tube dimensions available

ORDER-No.	S mm	di mm	Fins/in.	Fa m²/m	Fa/Fi	Weight Kg/m	FRZ m²/m
TECHNIFIN® L 1.2.51.-5			5	0,678	10,09	1,51	0,0229
TECHNIFIN® L 1.2.51-6			6	0,798	11,87	1,58	0,0224
TECHNIFIN® L 1.2.51-7			7	0,918	13,65	1,65	0,0219
TECHNIFIN® L 1.2.51-8	2	21,4	8	1,037	15,43	1,72	0,0214
TECHNIFIN® L 1.2.51-9			9	1,157	17,21	1,79	0,0209
TECHNIFIN® L 1.2.51-10			10	1,277	18,99	1,85	0,0204
TECHNIFIN® L 1.2.51-11			11	1,396	20,77	1,94	0,0199
TECHNIFIN® L 1.2,5.51-5			5	0,678	10,58	1,76	0,0229
TECHNIFIN® L 1.2,5.51-6	2,11		6	0,798	12,45	1,83	0,0224
TECHNIFIN® L 1.2,5.51-7	(14 BWG)		7	0,918	14,32	1,90	0,0219
TECHNIFIN® L 1.2,5.51-8	Min. Wall	(20,4)	8	1,037	16,19	1,98	0,0214
TECHNIFIN® L 1.2,5.51-9	-2,5		9	1,157	18,05	2,05	0,0209
TECHNIFIN® L 1.2,5.51-10			10	1,277	19,92	2,11	0,0204
TECHNIFIN® L 1.2,5.51-11			11	1,396	21,79	2,19	0,0199
TECHNIFIN® L 1.3.51-5			5	0,678	11,13	2,01	0,0229
TECHNIFIN® L 1.3.51-6	2,77		6	0,798	13,09	2,08	0,0224
TECHNIFIN® L 1.3.51-7	(12 BWG)		7	0,918	15,06	2,15	0,0219
TECHNIFIN® L 1.3.51-8	Min. Wall	(19,4)	8	1,037	17,02	2,22	0,0214
TECHNIFIN® L 1.3.51-9	-3,0		9	1,157	18,98	2,29	0,0209
TECHNIFIN® L 1.3.51-10			10	1,277	20,95	2,36	0,0204
TECHNIFIN® L 1.3.51-11			11	1,396	22,91	2,44	0,0199
TECHNIFIN® L 1.2.57-5			5	0,885	13,16	1,65	0,0286
TECHNIFIN® L 1.2.57-6			6	1,046	15,56	1,73	0,0280
TECHNIFIN® L 1.2.57-7			7	1,207	17,95	1,82	0,0274
TECHNIFIN® L 1.2.57-8	2	21,4	8	1,368	20,35	1,92	0,0268
TECHNIFIN® L 1.2.57-9			9	1,529	22,74	2,01	0,0262
TECHNIFIN® L 1.2.57-10			10	1,690	25,14	2,11	0,0256
TECHNIFIN® L 1.2.57-11			11	1,851	27,53	2,20	0,0250
TECHNIFIN® L 1.2,5.57-5			5	0,885	13,81	1,89	0,0286
TECHNIFIN® L 1.2,5.57-6	2,11		6	1,046	16,32	1,99	0,0280
TECHNIFIN® L 1.2,5.57-7	(14BWG)		7	1,207	18,83	2,08	0,0274
TECHNIFIN® L 1.2,5.57-8	Min.Wall	(20,4)	8	1,368	21,35	2,18	0,0268
TECHNIFIN® L 1.2,5.57-9	-2,5		9	1,529	23,86	2,27	0,0262
TECHNIFIN® L 1.2,5.57-10			10	1,690	26,37	2,37	0,0256
TECHNIFIN® L 1.2,5.57-11			11	1,851	28,88	2,46	0,0250
TECHNIFIN® L 1.3.57-5			5	0,885	14,42	2,14	0,0286
TECHNIFIN® L 1.3.57-6	2,77		6	1,046	17,16	2,23	0,0280
TECHNIFIN® L 1.3.57-7	(12BWG)		7	1,207	19,80	2,33	0,0274
TECHNIFIN® L 1.3.57-8	Min.Wal	(19,4)	8	1,368	22,45	2,42	0,0268
TECHNIFIN® L 1.3.57-9	-3,0		9	1,529	25,09	2,52	0,0262
TECHNIFIN® L 1.3.57-10			10	1,690	27,73	2,61	0,0256
TECHNIFIN® L 1.3.57-11			11	1,851	30,37	2,71	0,0250

Given weights are for steel tubes with Aluminium fins. Weight calculation for steel fins:
Kg/m weight of table + 0,1827 x fins per inch.

(Base tubes from 12,7 mm OD (½“) up to 38,1 mm (1½“) possible with different fin caracteristics.)



L_1 max. = 12 000 mm
L_2 max. = acc. to clients specification

Fin Thickness = 0,4 mm

Fa = Outer Tube Surface Area incl. Surface Area of Fins
Fi = Interior Tube Surface Area per Meter (m2/m)
F_{ZR} = Uncovered Tube Area between the fins

MATERIAL COMBINATIONS

Core Tube

Carbon steels, low-alloy steels, stainless steels, brass, copper, copper-nickel alloys, aluminium bronze, nickel-alloys, as well as exotic grades.

Core tubes with extremely thin wall materials can be applied.

Exterior Tube & Fins

Generally Aluminium (different grades available)

FIELDS OF APPLICATION

- the petroleum, chemical and petrochemical industries
- natural gas treatment
- the steel industry: blast furnace and converter cooling systems
- power generation: steam turbine exhaust condensing
  - contact condensing with cooling of circulating condensate
  - fossil and nuclear power plants
- air conditioning (freon, ammonia, propane)
- incineration of household refuse
- compressor coolers, ect.

MANUFACTURING PROCESS

A polished and deoiled base tube is set in an aluminium sleeve. The whole goes through the fin-machine which consists of three spindles set at 120° each on bearing a stack of plates. These plates, stacked in from and diameter first build the fin, then bond the outer and inner tubes together.

In certain cases (high air speed) the fins are serrated after fin process so as to increase the air coefficient.

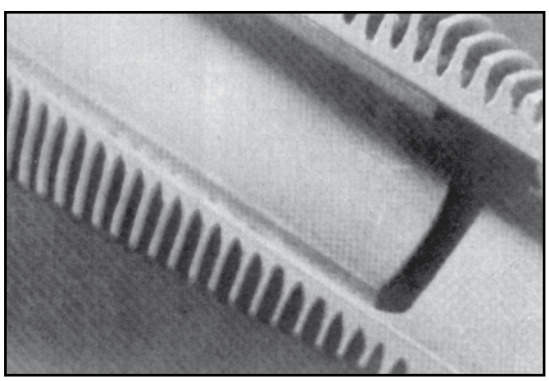
ADVANTAGES

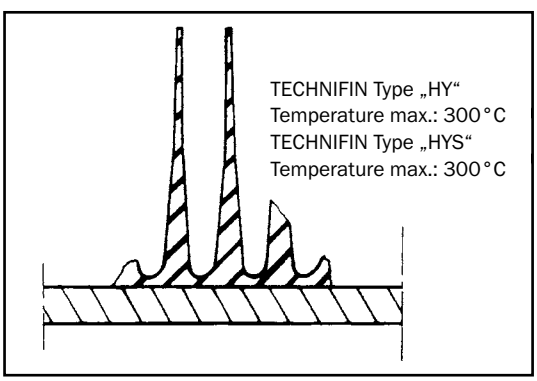
1) Thermal

The bonding of the outer and inner tubes removes the risk of loss of contact with the aluminium due to thermal stress.
Maximum operating temperature: 250°C.
The transfer coeffcient remains steady.
Additionally as the outer sleeve is continuous no electrolytic couple is created.

2) Mechanical

The fins are more rigid and stand the handling shocks better, compared to types „G“ an „L“.



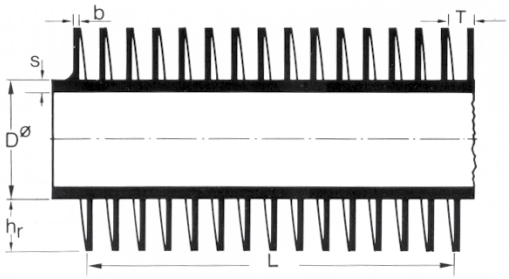


D = 25,4 mm* **DR = 50,8 mm + DR = 57 mm**
*on request, other core tube dimensions available

ORDER-No.	S mm	di mm	Fins/in.	Fa m²/m	Fa/Fi	Weight Kg/m	FZR m²/m
TECHNIFIN® HY 1.1.51-8			8	0,991	13,48	1,49	0,0204
TECHNIFIN® HY 1.1.51-9	1,0	23,4	9	1,105	15,02	1,49	0,0200
TECHNIFIN® HY 1.1.51-10			10	1,218	16,56	1,49	0,0197
TECHNIFIN® HY 1.1,2.51-8			8	0,991	13,72	1,68	0,0204
TECHNIFIN® HY 1.1,2.51-9	1,2	23,0	9	1,105	15,28	1,68	0,0200
TECHNIFIN® HY 1.1,2.51-10			10	1,218	16,85	1,68	0,0197
TECHNIFIN® HY 1.1,5.51-8			8	0,991	14,09	1,85	0,0204
TECHNIFIN® HY 1.1,5.51-9	1,5	22,4	9	1,105	15,69	1,85	0,0200
TECHNIFIN® HY 1.1,5.51-10			10	1,218	17,30	1,85	0,0197
TECHNIFIN® HY 1.2.51-8			8	0,991	14,74	2,12	0,0204
TECHNIFIN® HY 1.2.51-9	2,0	21,4	9	1,105	16,43	2,12	0,0200
TECHNIFIN® HY 1.2.51-10			10	1,218	18,11	2,12	0,0197
TECHNIFIN® HY 1.2,5.51-8			8	0,991	15,47	2,38	0,0204
TECHNIFIN® HY 1.2,5.51-9	2,5	20,4	9	1,105	17,23	2,38	0,0200
TECHNIFIN® HY 1.2,5.51-10			10	1,218	19,00	2,38	0,0197
TECHNIFIN® HY 1.3.51-8			8	0,991	16,26	2,62	0,0204
TECHNIFIN® HY 1.3.51-9	3,0	19,4	9	1,105	18,12	2,62	0,0200
TECHNIFIN® HY 1.3.51-10			10	1,218	19,98	2,62	0,0197
TECHNIFIN® HY 1.1.57-8			8	1,330	18,10	1,69	0,0259
TECHNIFIN® HY 1.1.57-9	1,0	23,4	9	1,486	20,23	1,69	0,0254
TECHNIFIN® HY 1.1.57-10			10	1,642	22,33	1,69	0,0249
TECHNIFIN® HY 1.1,2.57-8			8	1,330	18,41	1,88	0,0259
TECHNIFIN® HY 1.1,2.57-9	1,2	23,0	9	1,486	20,58	1,88	0,0254
TECHNIFIN® HY 1.1,2.57-10			10	1,642	22,72	1,88	0,0249
TECHNIFIN® HY 1.1,5.57-8			8	1,330	18,91	2,05	0,0259
TECHNIFIN® HY 1.1,5.57-9	1,5	22,4	9	1,486	21,11	2,05	0,0254
TECHNIFIN® HY 1.1,5.57-10			10	1,642	23,33	2,05	0,0249
TECHNIFIN® HY 1.2.57-8			8	1,330	19,79	2,32	0,0259
TECHNIFIN® HY 1.2.57-9	2,0	21,4	9	1,486	22,12	2,32	0,0254
TECHNIFIN® HY 1.2.57-10			10	1,642	24,41	2,32	0,0249
TECHNIFIN® HY 1.2,5.57-8			8	1,330	20,76	2,58	0,0259
TECHNIFIN® HY 1.2,5.57-9	2,5	20,4	9	1,486	23,20	2,58	0,0254
TECHNIFIN® HY 1.2,5.57-10			10	1,642	25,61	2,58	0,0249
TECHNIFIN® HY 1.3.57-8			8	1,330	21,83	2,82	0,0259
TECHNIFIN® HY 1.3.57-9	3,0	19,4	9	1,486	24,40	2,82	0,0254
TECHNIFIN® HY 1.3.57-10			10	1,642	26,93	2,82	0,0249

Given weights are for steel tubes with Aluminium fins. Weight calculation for steel fins:
Kg/m weight of table + 0,1827 x fins per inch.

(Base tubes from 12,7 mm OD (½“) up to 38,1 mm (1½“) possible with different fin caracteristics.)



Size Range

Base tube size:	6-219.1 (other sizes upon request)
Fins:	50-500 fins/meter
Fin thickness:	0.2-1.5 mm

Fin quantity and size depend on diameter of base tube. In case of deviation against the sizes of the opposite page, please ask us.

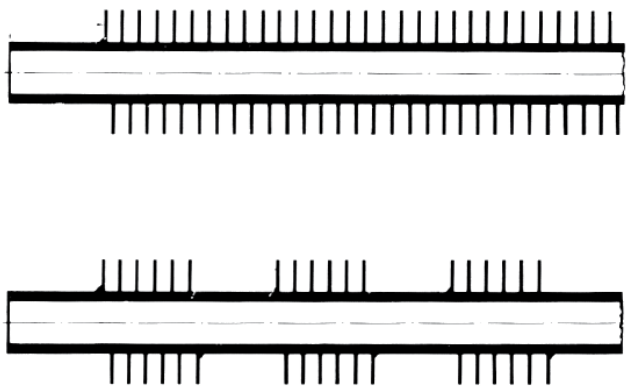
Tolerances:	Fin height:	+/- 1mm
	Fins/meter:	+/- 2%/meter
	Plain ends:	+/- 5mm

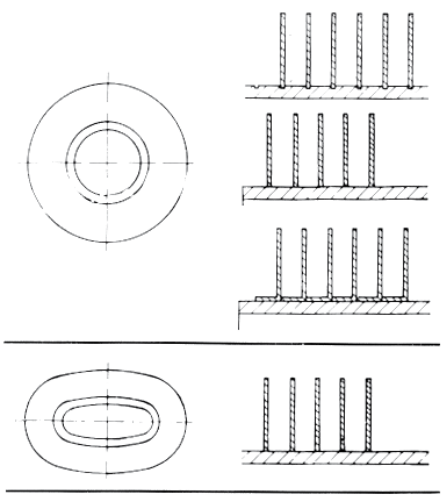
Manufacturing Process

Fins are spirally wound on a base tube, without welding, just fin spot welded. Non ferrous tubes and fins on either root soldered or completely tinned
Execution: black, galvanized and for special applications Stainless Steel, Copper, Brass, and/or Aluminium.
Ends can be bevelled, bended upon request.

Fields of application

Climatic Industry, Cooling
Heating, Drying



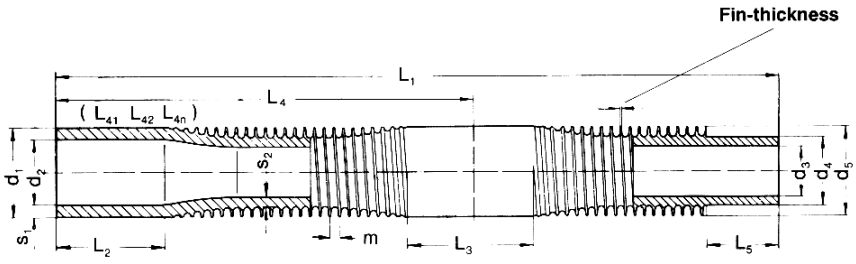


TECHNIFIN® Type "I"
Standard Size Range

Tube		Strip	Fins		Surface	Weight
OD	Wall	Size	Diam.	Fins/m	Area	kg/m
10,2	1,6	10 x 0,4	30	115	0,22	0,60
				200	0,37	0,83
				320	0,57	1,09
15	1,5	10 x 0,4	35	150	0,34	0,91
				250	0,54	1,16
				350	0,74	1,47
17,2	1,8	10 x 0,4	37,2	80	0,22	0,91
				150	0,37	1,11
				225	0,52	1,32
				300	0,68	1,54
				330	0,74	1,62
17,2	1,8	14 x 0,4	45,2	85	0,35	1,10
				110	0,44	1,21
				210	0,80	1,70
				250	0,95	1,88
18	2	10 x 0,4	38	80	0,22	1,02
				150	0,37	1,22
				200	0,48	1,37
				250	0,59	1,51
				300	0,70	1,65
18	2	14 x 0,4	46	81	0,35	1,18
				150	0,60	1,52
				220	0,85	1,88
				290	1,11	2,21
20	2	10 x 0,4	48	80	0,24	1,13
				120	0,33	1,25
				180	0,47	1,44
				250	0,62	1,65
				300	0,74	1,80
20	2	14 x 0,4	48	100	0,44	1,40
				150	0,63	1,65
				200	0,82	1,91
				250	1,01	2,17
21,3	2	10 x 0,4	41,3	100	0,30	1,27
				130	0,37	1,37
				185	0,49	1,54
				210	0,55	1,62
				250	0,64	1,75
				300	0,76	1,94
21,3	2	14 x 0,4	49,3	98	0,45	1,49
				150	0,65	1,78
				200	0,84	2,05
				250	1,04	2,32
21,3	2	20 x 0,5	61,3	65	0,51	1,70
				100	0,75	2,17
				135	1,00	2,50
25	2	14 x 0,4	53	100	0,49	1,69
				150	0,70	2,09
				200	0,91	2,26
				250	1,12	2,55
26,9	2,3	14 x 0,4	54,9	100	0,51	1,99
				160	0,77	2,34
				210	0,99	2,64
26,9	2,3	20 x 0,5	66,9	60	0,53	2,15
				100	0,83	2,65
				140	1,14	3,15
30	2,6	20 x 0,5	70	100	0,88	3,08
				150	1,28	3,73
				200	1,67	4,38
33,7	2,6	20 x 0,5	73,7	40	0,43	2,56
				110	1,02	3,52
				157	1,41	4,32
				220	1,93	5,03
33,7	2,6	26 x 1	85,7	40	0,60	3,64
				67	0,95	4,75
				110	1,48	6,51

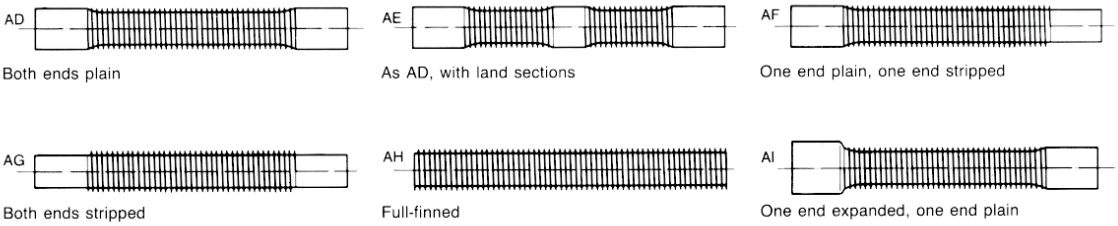
Tube		Strip	Fins		Surface	Weight
OD	Wall	Size	Diam.	Fins/m	Area	kg/m
38	2,6	26 x 1	90	40	0,64	4,01
				80	1,17	5,73
				123	1,74	7,58
38	2,6	30 x 1	98	48	0,91	4,88
				83	1,49	6,77
				128	2,24	9,20
38	2,6	35 x 1	108	48	1,14	5,62
				88	2,00	8,40
				120	2,68	10,62
44,5	2,6	26 x 1	96,5	50	0,84	5,00
				85	1,34	6,61
				120	1,84	8,23
44,5	2,6	30 x 1	104,5	44	0,91	5,22
				72	1,41	6,84
				120	2,26	9,61
44,5	2,6	35 x 1	114,5	50	1,27	6,38
				70	1,72	7,85
				105	2,51	10,42
48,3	2,6	26 x 1	100,3	40	0,74	4,86
				85	1,40	7,02
				155	2,43	10,37
48,3	2,6	30 x 1	108,3	62,5	1,29	6,69
				91	1,82	8,40
				115	2,26	9,81
48,3	2,6	35 x 1	118,3	50	1,32	6,75
				70	1,78	8,27
				90	2,25	9,79
57	2,9	30 x 1	117	67	1,50	8,21
				92	2,00	9,83
				117	2,50	11,44
				140	2,95	12,93
57	2,9	35 x 1	127	52	1,48	8,14
				72	1,98	9,78
				92	2,49	11,42
				112	2,99	13,04
57	2,9	50 x 1	157	33	1,64	8,66
				40	1,95	9,67
				52,5	2,50	11,47
76,1	2,9	30 x 1	136,1	63	1,69	10,01
				77	2,01	11,05
				98	2,49	12,62
				110	2,77	13,52
76,1	2,9	35 x 1	146,1	44	1,50	8,58
				61	2,00	11,30
				78	2,50	12,60
				96	3,00	14,30
76,1	2,9	50 x 1	176,1	36	2,03	11,00
				45	2,48	12,56
				56	3,02	14,33
88,9	3,2	35 x 1	158,9	55	2,00	12,43
				71	2,51	14,06
				87	3,01	15,70
88,9	3,2	50 x 1	188,9	35	2,14	12,88
				50	2,95	15,49
				65	3,75	18,09
108	3,6	35 x 1	178	47	1,99	14,71
				62	2,52	16,42
				76	3,01	18,03
108	3,6	40 x 1	188	51	2,50	16,37
				69	3,27	18,86
				86	3,99	21,22
108	3,6	50 x 1	208	30	2,10	15,06
				45	2,98	17,93
				62	3,98	21,18

OTHER SIZES CAN BE OFFERED UPON REQUEST!

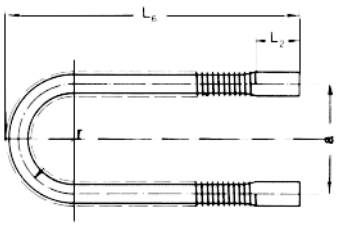


Fin-height h = 1.5 mm ± 0,15 mm Fin-thickness ~ 0.3 mm Length max. 12.0 m

d1	d5	d4	d4 stripped	S1	S2	L2	L3	L4	L5	L1
+0 -0,2	+0 -0,2	± 0,15	+0 -0,2	± 10%	± 10%	+5 -0	+5 -0	± 3 mm	+1 -0	< 2000 mm + 2 mm 2000 - 8000 mm + 1 ‰ max. 5 mm > 8000 mm + 0,7 ‰



U-Bent Fin Tubes



Surfaces
can be pickled or tinned upon request.

Materials
Please refer to the „Alloy table for fintubes TECHNIFIN Type N and M“

Fields of application
Chemical-, Petrochemical- and Petroleum Industries. Used in condensers, oilcoolers, waterheaters, heatexchangers, evaporators and heat-recoverers.

Manufacturing process
The fins are rolled out of the wall of the plain tube by use of a pass roller. Tube and fin consist of one piece.

Advantages
Economical solution of heatexchange problems of media with different heat conduction abilities or different current conditions. High chemical-, thermal- and mechanical resistance, suitable for rough working conditions.

16 FINS/ INCH FIN PITCH M = 1.59

Plain section					Finned section							
Code No. TECHNIFIN „N"	External Ø Inch	External Ø d_1 mm	Int. d_2 mm	Wall-thickn. S_1 mm	Root dia. Ø Int. d_3 mm	Root dia. Ø Ext. d_4 mm	Ext. Ø d_5 mm	Wall-thickn. BWG	Wall-thickn. S2 mm	Ext. surface Aa m^2/m	Radio outs. to ins. Aa/Ai	Weight G Cu ca. kg/m
16.1/2.19	1/2"	12,70	9,80	1,45	7,50	9,50	12,50	19	1,00	0,08	3,6	0,38
16.1/2.18			9,40	1,65	7,00			18	1,25		3,8	0,43
16.5/8.17	5/8"	15,90	11,90	2,00	9,70	12,70	15,70	17	1,50	0,11	3,6	0,65
16.5/8.16			11,60	2,15	9,40			16	1,65		3,7	0,69
16.3/4.17	3/4"	19,00	15,00	2,00	12,80	15,80	18,80	17	1,50	0,13	3,3	0,83
16.3/4.16			14,70	2,15	12,50			16	1,65		3,4	0,88
16.3/4.14			14,00	2,50	11,60			14	2,10		3,6	1,03
16.7/8.17	7/8"	22,20	18,20	2,00	16,00	19,00	22,00	17	1,50	0,16	3,1	1,00
16.7/8.16			17,90	2,15	15,70			16	1,65		3,2	1,06
16.7/8.14			17,20	2,50	14,80			14	2,10		3,3	1,25
16.1.17	1"	25,40	21,40	2,00	19,20	22,20	25,20	17	1,50	0,18	3,0	1,18
16.1.16			21,10	2,15	18,90			16	1,65		3,1	1,25
16.1.14			20,40	2,50	18,00			14	2,10		3,2	1,49

19 FINS/ INCH FIN PITCH M = 1.33

Plain section					Finned section							
Code No. TECHNIFIN „N"	External Ø Inch	External Ø d_1 mm	Int. d_2 mm	Wall-thickn. S_1 mm	Root dia. Ø Int. d_3 mm	Root dia. Ø Ext. d_4 mm	Ext. Ø d_5 mm	Wall-thickn. BWG	Wall-thickn. S_2 mm	Ext. surface Aa m^2/m	Radio outs. to ins. Aa/Ai	Weight G Cu ca. kg/m
19.1/2.21	1/2"	12,70	10,30	1,20	7,90	9,50	12,50	21	0,80	0,1	4,0	0,32
19.1/2.20			10,10	1,30	7,70			20	0,90		4,1	0,34
19.1/2.19			9,90	1,40	7,50			19	1,00		4,2	0,38
19.1/2.18			9,50	1,60	7,00			18	1,25		4,5	0,42
19.5/8.21	5/8"	15,90	13,40	1,25	11,10	12,70	15,70	21	0,80	0,12	3,6	0,44
19.5/8.20			13,20	1,35	10,90			20	0,90		3,7	0,47
19.5/8.19			13,00	1,45	10,70			19	1,00		3,8	0,51
19.5/8.18			12,60	1,65	10,20			18	1,25		4,0	0,58
19.5/8.17			11,90	2,00	9,70			17	1,50		4,2	0,69
19.5/8.16			11,60	2,15	9,40			16	1,65		4,3	0,74
19.3/4.20	3/4"	19,00	16,30	1,35	14,00	15,80	18,80	20	0,90	0,15	3,5	0,61
19.3/4.19			16,10	1,45	13,80			19	1,00		3,6	0,63
19.3/4.18			15,70	1,65	13,30			18	1,25		3,7	0,72
19.3/4.17			15,00	2,00	12,80			17	1,50		3,8	0,83
19.3/4.16			14,80	2,10	12,50			16	1,65		3,9	0,88
19.3/4.14			14,10	2,45	11,60			14	2,10		4,2	1,03
19.7/8.19	7/8"	22,20	19,30	1,45	17,00	19,00	22,00	19	1,00	0,18	3,4	0,80
19.7/8.18			18,90	1,65	16,50			18	1,25		3,5	0,89
19.7/8.17			18,20	2,00	16,00			17	1,50		3,6	1,00
19.7/8.16			18,00	2,10	15,70			16	1,65		3,7	1,07
19.7/8.14			17,30	2,45	14,80			14	2,10		3,9	1,26
19.1.18	1"	25,40	22,10	1,65	19,70	22,20	25,20	18	1,25	0,21	3,4	1,05
19.1.17			21,40	2,00	19,20			17	1,50		3,5	1,19
19.1.16			21,10	2,15	18,90			16	1,65		3,6	1,27
19.1.14			20,50	2,45	18,00			14	2,10		3,7	1,50

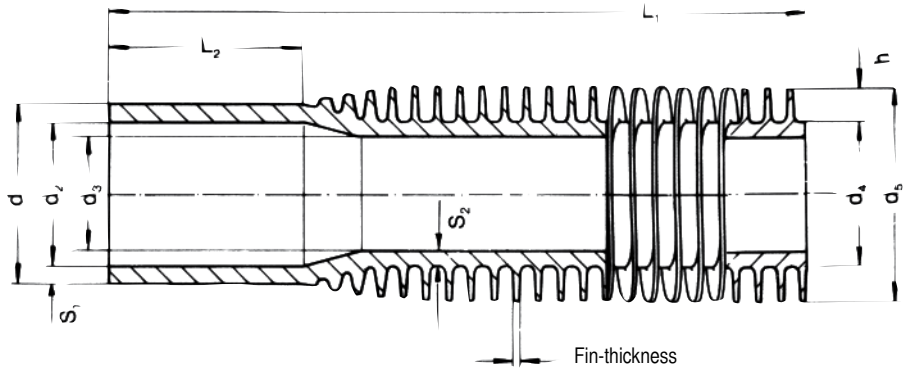
26 FINS/ INCH FIN PITCH M = 0.97

Plain section					Finned section							
Code No. TECHNIFIN „N"	External Ø Inch	External Ø d_1 mm	Int. d_2 mm	Wall-thickn. S_1 mm	Root dia. Ø Int. d_3 mm	Root dia. Ø Ext. d_4 mm	Ext. Ø d_5 mm	Wall-thickn. BWG	Wall-thickn. S_2 mm	Ext. surface Aa m^2/m	Radio outs. to ins. Aa/Ai	Weight G Cu ca. kg/m
26.1/2.21	1/2"	12,70	10,30	1,20	7,90	9,50	12,50	21	0,80	0,12	5,0	0,34
26.1/2.19			9,90	1,40	7,50			19	1,00		5,3	0,40
26.1/2.18			9,50	1,60	7,00			18	1,25		5,8	0,45
26.5/8.21	5/8"	15,90	13,40	1,25	11,10	12,70	15,70	21	0,80	0,16	4,6	0,46
26.5/8.19			13,00	1,45	10,70			19	1,00		4,8	0,53
26.5/8.18			12,60	1,65	10,20			18	1,25		5,0	0,60
26.3/4.20	3/4"		16,30	1,35	14,00	15,80	18,80	20	0,90	0,20	4,5	0,63
26.3/4.19			16,10	1,45	13,80			19	1,00		4,6	0,67
26.3/4.18			15,70	1,65	13,30			18	1,25		4,8	0,77
26.7/8.19	7/8"	22,20	19,30	1,45	17,00	19,00	22,00	19	1,00	0,23	4,4	0,81
26.7/8.18			18,90	1,65	16,50			18	1,25		4,5	0,93
26.7/8.17			18,20	2,00	16,00			17	1,50		4,7	1,04
26.1.18	1"	25,40	22,10	1,65	19,70	22,20	25,20	18	1,25	0,27	4,4	1,09
26.1.17			21,40	2,00	19,20			17	1,50		4,5	1,23
26.1.16			21,10	2,15	18,90			16	1,65		4,6	1,31

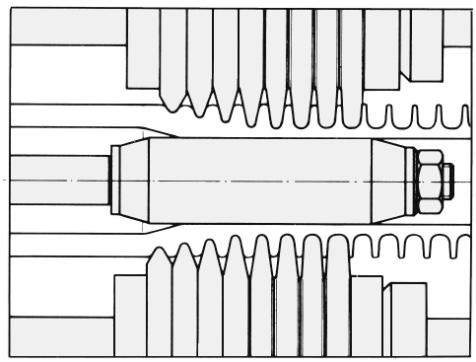
Weights are based on SF-Cu Copper. For other materials please apply the following conversion factors: CuNi 70/30: 1.0, CuNi 90/10: 1.0, Aluminium Brass: 0.93, Admiralty Brass: 0.96, Aluminium: 0.31, Steel: 0.88

Fins per inch : 11 Fin-height: h=3,5 mm ± 0,35 mm Fin thickness ~ 0,3 mm Length max. 12,0 m

External Ø d_1 mm	Int. Ø d_2 mm	Wall-thickn. S_1 mm	Root dia. Int. Ød_3 mm	Root dia. Ext. Ød_4 mm	Ext. Ød_5 mm	Wall-thickn. BWG	Wall-thickn. S_2 mm	Ext. surface Aa m^2/m	Radio outs. to ins. Aa/Ai	Weight G Cu ca. kg/m
13,00	9,40	1,80	7,90	9,50	16,50	21	0,80	0,16	6,5	0,50
13,00	9,00	2,00	7,50	9,50	16,50	19	1,00	0,16	6,7	0,53
16,00	12,40	1,80	10,90	12,50	19,50	21	0,80	0,19	5,6	0,61
16,00	12,00	2,00	10,50	12,50	19,50	19	1,00	0,19	5,8	0,67
18,00	14,00	2,00	12,50	14,50	21,50	19	1,00	0,21	5,4	0,77
18,00	13,50	2,25	12,00	14,50	21,50	18	1,25	0,21	5,6	0,85
22,00	18,00	2,00	16,50	18,50	25,50	19	1,00	0,27	5,2	0,96
22,00	17,50	2,25	16,00	18,50	25,50	18	1,25	0,27	5,4	1,06
28,00	23,50	2,25	22,00	24,50	31,50	18	1,25	0,34	4,9	1,45
28,00	23,00	2,50	21,50	24,50	31,50	17	1,50	0,34	5,1	1,60
Alloys:		SF-Cu	CuAsP	CuNi10Fe	Al 99,5	AlMn	AlMg 3			
Weight Conversion factor:		1,0	1,0	1,0	0,31	0,31	0,31			



d1	d3	d4 stripped	S1	S2	L2	L1
+0 -0,2	± 0,13	+0 -0,2	± 10%	± 10%	+5 -0	up to 2000 mm + 2 mm 2000 - 8000 mm + 1 ‰, max. 5 mm over 8000 mm + 0,7 ‰



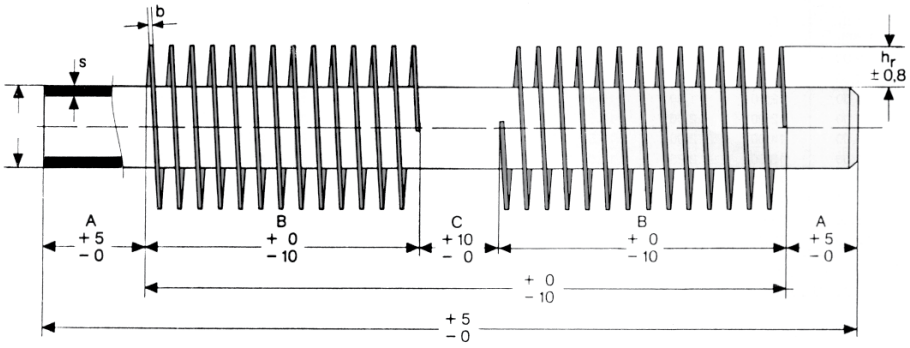
Fields of application
Water heating, solar technics, oil-cooling, heat-exchangers, condensers, evaporators.

Manufacturing process
The fins are rolled out of the wall of the plain tube as type „N“, but higher fins.

Advantages
Economical solution of heat-exchange problems of media with different heat conduction abilities or different current conditions. High chemical-, thermal- and mechanical resistance, suitable for rough working conditions.

Material	ASTM DIN	German	Mat.-No.	BS	Grade
Carbon Steel	A 179ST 35.8/1	1.0305	3602/1	CFS 360	
Carbon Steel	A 192 / A 161 Gr. LC	ST 35.8/1	1.0305	3059/2	CFS/HFS 360
Carbon Steel	A 210 Gr. A1	ST 45.8/1	1.0405	3602/1	CFS/HFS 410
Carbon Steel	A 210 Gr.C	17 Mn 4	1.0481	3602/1	CFS/HFS 460
Low Alloy Steel	A 209 T1	16 Mo 5	1.5423	3606	245
Low Alloy Steel	A 213 / A 199 T11/T12	13 CrMo 44	1.7335	3604	621
Low Alloy Steel	A 213 / A 199 T22	10 CrMo 910	1.7380	3059	622-440
Low Alloy Steel	A 213 / A 199 T5	12 CrMo 195	1.7362	3604	625
Low Alloy Steel	A 213 / A 199 T9	X12 CrMo 91	1.7386	3059/3604	629-470
Stainless Steel	A 213 / A 269 / A249 TP 304	X5 CrNi 189	1.4301	970	304 S 15
Stainless Steel	A 213 / A 269 / A249 TP 304L	X2 CrNi 189	1.4306	970	304 S 12
Stainless Steel	A 213 / A 269 / A249 TP 321	X10 CrNiTi 189	1.4541	970	321 S 12
Stainless Steel	A 213 / A 269 / A249 TP 316	X5 CrNiMo 1810	1.4401	970	315 S 16
Stainless Steel	A 213 / A 269 / A249 TP 316L	X2 CrNiMo 1810	1.4404	970	316 S 12
Stainless Steel	A 213 / A 269 / A249 TP 347	X10 CrNiNb 189	1.4550	970	347 S 17
Stainless Steel	A 213 / A 269 / A249 TP 316TI	X10 CrNiMoTi 1810	1.4571	970	320 S 17
Stainless Steel	A 789 / A 790 UNS S 31803	X2 CrNiMo 11225	1.4462	---	
Stainless Steel	B 677 Alloy 904L	X2 NiCrMoCu 25205	1.4539	---	
Nickel	B 161 UNS No 2200	Ni 99,2	2.4066	3074	NA 11
Nickel	B 161 UNS No 2201	Ni 99,2	2.4068	3074	NA 12
Nickel-Copper	B 163 N 04400	NiCu30Fe	2.4360	3074	NA 13
Nickel-Chrom-Iron	B 163 6600	NiCr15Fe	2.4816	3074	NA 14
Nickel-Chrom-Iron	B 161 8825	NiCr21Mo	2.4858	3074	NA 16
Nickel-Chrom-Iron	B 468 08020	---		---	
Nickel-Chrom-Iron	B 163 08800	X10 NiCrAlTi 3220	1.4876	3074	NA 15
Copper Alloy	B 75 / B 111 UNS C12200	Sf-Cu	2.0090	2871	C 106
Copper Alloy	B 75 / B 111 UNS C14200	CuAsp	2.1491	2871	C 107
Copper Alloy	B 111 UNS C44300	CuZn28Sn1	2.0470	2871	CZ 111
Copper Alloy	B 111 UNS C68700	CuZn20Al2	2.0460	2871	CZ 110
Copper Alloy	B 111 UNS C60800	CuAl5AS	2.0918	---	
Copper Alloy	B 111 UNS C70600	CuNi10Fe1Mn	2.0872	2871	CN 102
Copper Alloy	B 111 UNS C71500	CuNi30Mn1Fe	2.0882	2871	CN 107
Aluminium Alloys	Alloy 1050 / 1050A	Al 99,5	3.0255	1050A (1B)	
Aluminium Alloys	Alloy 5754	AlMg3	3.3535	(N5)	
Aluminium Alloys	Alloy 3003	AlMnCu	3.0517	---	
Aluminium Alloys	Alloy 5083	AlMg4,5Mn	3.3547	5083 (N8)	
Titanium	B338 Gr. 2	Ti2	3.7035		

and other material grades on request.



Fields of application
Fired Heaters, Heat Exchangers, Boilers, Pre-Heaters, Coolers, Heat Pipes, Dryers, Heaters

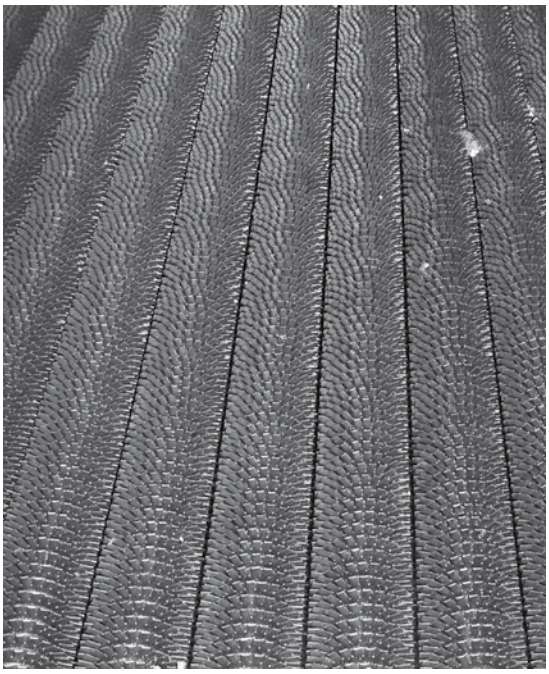
Manufacturing process
The fin strip is spirally wound onto the tube and welded continuously to the tube along the spiral foot.
Welding process: HF, SF, TIG, MIG, MAG

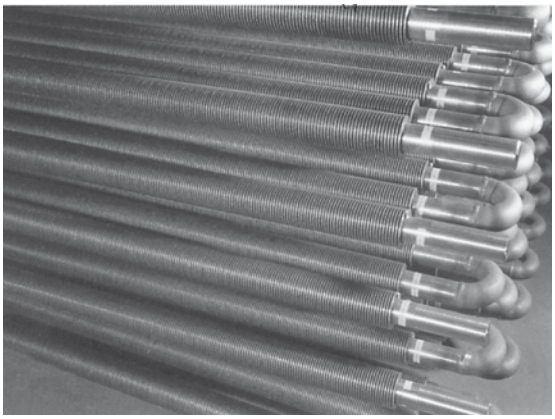
For type „WOS“ fins are serrated.

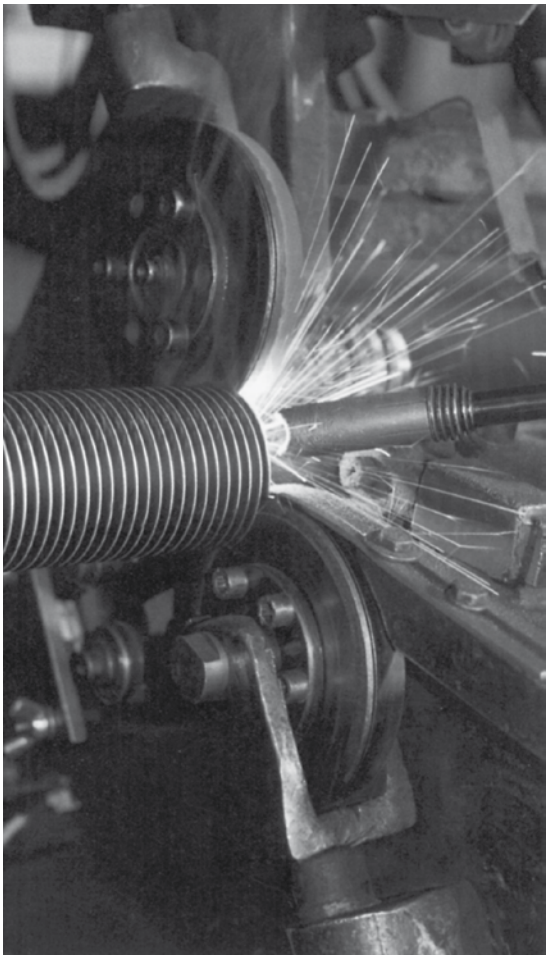
Advantage

Type „WO“
Strong connection between fin and base tube, prevents loosening of fin because of heat stress, oxydization, corrosion etc. Use at very high temperatures possible.

Type „WOS“
As per Type „WO“, but fins are serrated. Therefore higher heat transfer coefficient, for the same pressure drop compared with „WO“-fin.







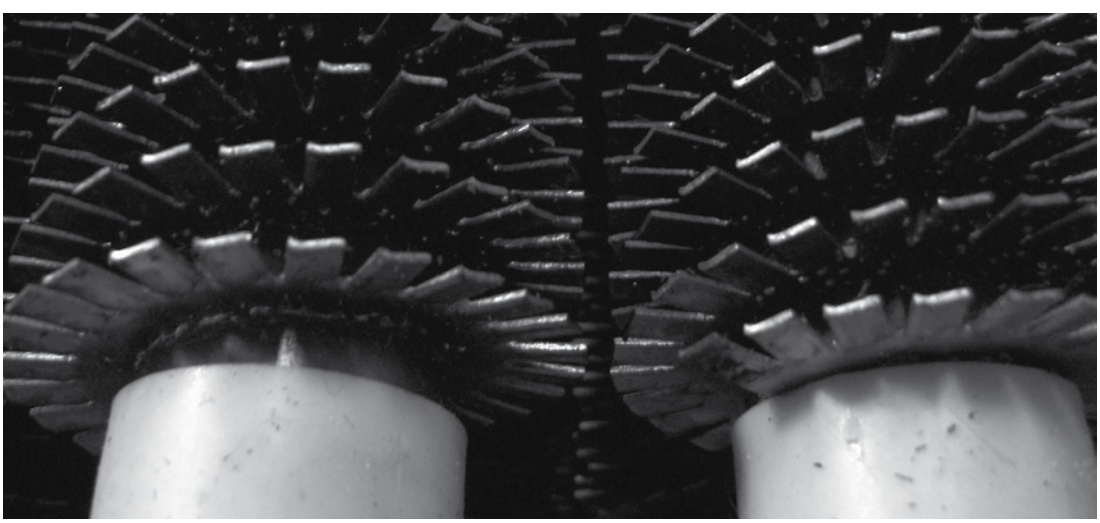
Materials

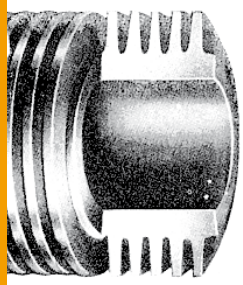
Base tube	**Fins**
Carbon Steel	Carbon Steel
Low Alloy Steel	Low Alloy Steel
Stainless Steel	Ferritic Stainless Steel
Nickel Alloys	Austenitic Stainless Steel
	Nickel Alloys

Heat transfer surface to be calculated al follows:

$$HTS = \frac{\pi}{10^6} \left[103 \cdot da + 2N \cdot HR \, (HR + da) - N \cdot da \cdot b \right]$$

HTS	=	Heat Transfer Surface in m2/m
da	=	Outside Diameter of the Bare Tubes in mm
HR	=	Fin height in mm
b	=	Fin Thickness in mm
N	=	Number of Fins per mm





Core Tubes				Number of fins N		Fin height x fin thickness (HR x b) Fin tube surface area / fin tube weight									
O.D. d_a mm	Wall thickn s mm	Surface area F´k m²/m	Weight Gk kg/m	per m	per inch	10 x 1,3		13 x 1,3		15 x 1,3		19 x 1,5		25 x 1,5	
						m²/m	kg/m	m²/m	kg/m	m²/m	kg/m	m²/m	kg/m	m²/m	kg/m
				250	6,35	0,44	2,72								
				200	5	0,36	2,30								
16	1,8	0,05	0,63	150	3,8	0,29	1,88								
				118	3	0,24	1,64								
				100	2,5	0,21	1,47								
				250	6,35	0,54	3,46								
				200	5	0,44	2,96								
21,3	2	0,07	0,95	150	3,8	0,35	2,46								
				118	3	0,29	2,14								
				100	2,5	0,26	1,96								
				250	6,35	0,60	3,94	0,83	5,09						
				200	5	0,50	3,38	0,68	4,30						
25	2	0,08	1,13	150	3,8	0,39	2,82	0,53	3,51						
				118	3	0,33	2,46	0,43	3,01						
				100	2,5	0,29	2,26	0,38	2,72						
				200	5	0,60	4,55	0,81	5,61	0,96	6,37				
				150	3,8	0,48	3,88	0,63	4,67	0,74	5,25				
31,8	2,6	0,10	1,87	118	3	0,40	3,46	0,52	4,08	0,61	4,53				
				100	2,5	0,35	3,22	0,45	3,74	0,53	4,13				
				80	2	0,30	2,95	0,38	3,37	0,44	3,68				
				200	5	0,69	5,82	0,92	7,00	1,09	7,84	1,44	10,8		
				150	3,8	0,55	5,05	0,72	5,93	0,85	6,57	1,11	8,76		
38	3,2	0,12	2,75	118	3	0,46	4,56	0,59	5,26	0,69	5,76	0,90	7,48		
				100	2,5	0,41	4,29	0,52	4,87	0,60	5,30	0,78	6,76		
				80	2	0,35	3,98	0,44	4,45	0,51	4,79	0,65	5,96		
				200	5	0,85	7,30	1,11	8,67	1,31	9,64	1,71	13,0		
				150	3,8	0,67	6,36	0,87	7,39	1,02	8,12	1,32	10,7		
48,3	3,2	0,15	3,56	118	3	0,56	5,76	0,72	6,57	0,83	7,15	1,07	9,14		
				100	2,5	0,50	5,43	0,63	6,11	0,73	6,60	0,93	8,29		
				80	2	0,43	5,06	0,54	5,61	0,61	6,00	0,78	7,35		
				200	5	0,89	7,68	1,16	9,10	1,36	10,1	1,78	13,6	2,50	17,8
				150	3,8	0,70	6,70	0,91	7,77	1,06	8,53	1,38	11,2	1,92	14,3
51	3,2	0,16	3,77	118	3	0,59	6,08	0,75	6,92	0,87	7,52	1,12	9,58	1,54	12,1
				100	2,5	0,52	5,73	0,66	6,44	0,76	6,95	0,97	8,69	1,33	10,8
				80	2	0,45	5,34	0,56	5,91	0,64	6,31	0,81	7,71	1,10	9,4
				200	5	0,97	8,54	1,28	10,1	1,49	11,2	1,94	14,9	2,70	19,4
				150	3,8	0,78	7,47	1,00	8,62	1,16	9,44	1,50	12,3	2,07	15,6
57	3,2	0,18	4,24	118	3	0,65	6,78	0,83	7,69	0,95	8,33	1,22	10,6	1,67	13,2
				100	2,5	0,58	6,39	0,73	7,16	0,84	7,71	1,06	9,59	1,44	11,8
				80	2	0,50	5,96	0,62	6,58	0,70	7,02	0,88	8,52	1,19	10,3
				200	5	1,02	9,01	1,34	10,6	1,56	11,7	2,03	15,7	2,81	20,3
				150	3,8	0,82	7,88	1,05	9,09	1,22	9,94	1,57	12,9	2,16	16,3
60,3	3,2	0,19	4,5	118	3	0,68	7,16	0,87	8,11	1,00	8,78	1,27	11,1	1,74	13,8
				100	2,5	0,61	6,76	0,76	7,56	0,88	8,13	1,11	10,1	1,50	12,4
				80	2	0,52	6,31	0,65	6,95	0,74	7,40	0,93	8,97	1,24	10,8

Formula for Calculation of Fin Tube Weight: - Carbon Steel -

$$kg/m = \frac{7{,}85 \cdot \pi}{106} \left[1000 \cdot s\,(da - s) + b \cdot N \cdot HR\,(HR + da) \right]$$

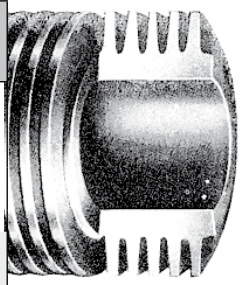
da	=	bare pipe O.D. (mm)
s	=	bare pipe wallthickness (mm)
b	=	fin thickness (mm)
N	=	fins per meter
HR	=	fin height (mm)

This is a simplified formula and should be used as estimation only, since manufacturing tolerances are not considered

Factor other than Carbon Steel:

Type 304/310/316/321:	1.024	Techalloy 200 : 1.133
Techalloy 600/625:	1.073	Techalloy 825 : 1.038

Core Tubes				Number of fins N		Fin height x fin thickness (HR x b) Fin tube surface area / fin tube weight									
						10 x 1,3		13 x 1,3		15 x 1,3		19 x 1,5		25 x 1,5	
O.D. d_a mm	Wall thickn s mm	Surface area F´k m^2/m	Weight Gk kg/m	per m	per inch	m^2/m	kg/m	m^2/m	kg/m	m^2/m	kg/m	m^2/m	kg/m	m^2/m	kg/m
				200	5	1,26	11,3	1,63	13,2	1,89	14,5	2,44	19,1	3,34	24,4
				150	3,8	1,00	9,89	1,28	11,3	1,48	12,3	1,89	15,8	2,57	19,8
76,1	3,2	0,24	5,75	118	3	0,84	9,01	1,06	10,1	1,22	10,9	1,54	13,6	2,07	16,8
				100	2,5	0,75	8,51	0,94	9,46	1,07	10,1	1,34	12,4	1,79	15,1
				80	2	0,65	7,96	0,80	8,72	0,90	9,26	1,12	11,1	1,48	13,2
				200	5	1,45	13,1	1,87	15,3	2,16	16,8	2,77	21,9	3,77	27,8
				150	3,8	1,16	11,5	1,47	13,1	1,69	14,3	2,15	18,1	2,90	22,6
88,9	3,2	0,28	6,76	118	3	0,97	10,5	1,22	11,8	1,39	12,7	1,75	15,7	2,34	19,2
				100	2,5	0,86	9,93	1,08	11,0	1,22	11,8	1,53	14,3	2,03	17,3
				80	2	0,75	9,30	0,92	10,2	1,03	10,8	1,28	12,8	1,68	15,2
				200	5	1,64	15,9	2,11	18,3	2,43	19,9	3,10	25,6	4,20	32,1
				150	3,8	1,31	14,1	1,66	15,9	1,91	17,1	2,41	21,4	3,23	26,3
101,6	3,6	0,32	8,70	118	3	1,10	12,9	1,37	14,3	1,57	15,3	1,96	18,7	2,61	22,5
				100	2,5	0,98	12,3	1,21	13,5	1,38	14,3	1,71	17,2	2,26	20,4
				80	2	0,85	11,6	1,04	12,5	1,17	13,2	1,43	15,5	1,87	18,1
				200	5			2,34	20,4	2,70	22,3	3,43	28,6	4,63	35,6
				150	3,8			1,85	17,8	2,12	19,2	2,66	23,9	3,56	29,1
114,3	3,6	0,36	9,82	118	3			1,53	16,1	1,74	17,2	2,17	20,9	2,88	25,0
				100	2,5			1,35	15,1	1,53	16,0	1,90	19,2	2,49	22,7
				80	2			1,15	14,1	1,30	14,8	1,59	17,3	2,07	20,1
				200	5			2,85	26,4	3,27	28,6	4,14	36,1	5,53	44,3
				150	3,8			2,25	23,2	2,57	24,8	3,21	30,4	4,26	36,6
141,3	4,0	0,44	13,5	118	3			1,86	21,1	2,11	22,4	2,62	26,8	3,45	31,7
				100	2,5			1,65	19,0	1,86	21,1	2,29	24,8	2,99	28,9
				80	2			1,41	18,7	1,58	19,6	1,92	22,6	2,48	25,8
				200	5			3,18	31,5	3,65	33,9	4,60	42,2	6,13	51,2
				150	3,8			2,51	27,9	2,86	29,7	3,57	35,9	4,72	42,7
159	4,5	0,50	17,14	118	3			2,08	25,6	2,36	27,0	2,92	31,9	3,82	37,2
				100	2,5			1,84	24,3	2,07	25,5	2,55	29,6	3,31	34,2
				80	2			1,57	22,9	1,76	23,8	2,14	27,1	2,75	30,8
				200	5			3,35	33,3	3,85	35,8	4,84	44,5	6,44	53,9
				150	3,8			2,65	29,5	3,02	31,4	3,76	37,9	4,96	45,0
168,3	4,5	0,53	18,17	118	3			2,19	27,1	2,49	28,6	3,07	33,7	4,02	39,3
				100	2,5			1,94	25,7	2,19	27,0	2,68	31,3	3,48	36,0
				80	2			1,66	24,2	1,86	25,2	2,25	28,7	2,89	32,5
				200	5			3,83	42,3	4,38	45,1	5,50	55,0	7,29	65,5
				150	3,8			3,02	38,0	3,44	40,1	4,28	47,5	5,62	55,4
193,7	5,4	0,61	25,06	118	3			2,51	35,2	2,84	36,9	3,50	42,7	4,55	48,9
				100	2,5			2,22	33,7	2,50	35,1	3,06	40,0	3,95	45,3
				80	2			1,90	32,0	2,12	33,1	2,57	37,0	3,28	41,2
				200	5			4,30	50,3	4,92	53,2	6,16	64,5	8,15	76,1
				150	3,8			3,40	45,5	3,86	47,9	4,80	56,1	6,28	64,9
219,1	5,9	0,69	31,01	118	3			2,82	42,4	3,19	44,3	3,92	50,7	5,09	57,6
				100	2,5			2,49	40,7	2,80	42,3	3,43	47,7	4,42	53,6
				80	2			2,13	38,7	2,38	40,0	2,88	44,4	3,67	49,1



Many other sizes upon request – ask TPS!

Dimensions

Core tubes: to DIN 2448,2458 or ANSI B 36.10 from 16 to 219.1 mm O.D. (other dimensions upon enquiry)

Fins: 50 to 250 fins per meter finned tube
Height: up to 50 mm
Thickness: 0.9 to 6.0 mm
Number of fins and dimensions depend upon core tube diameter.
For dimensions not listed in the above table, please gibe your detailed enquiry.

Lengths: Limited only by transportation facilities or availability of core tube

Dimensional tolerances:

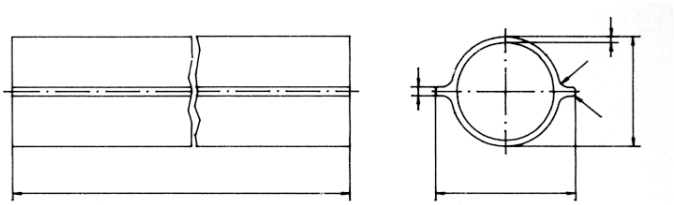
Core tube:	to respective core tube specification
Fin height:	± 0.8 mm
Number of fins:	+ 2%/m
Free ends:	+ 5mm
Free sections:	+ 10 mm

Fin design
free ends

free sections on the core tube

End shapes
plain
calibrated

bevelled for welding on one side to DIN 2559
bevelled for welding on both sides or ANSI B 16.25

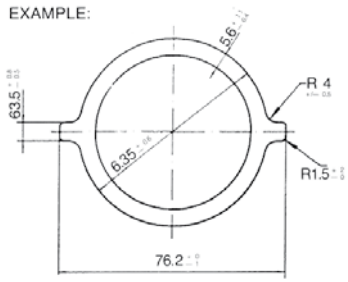


Standard Size Range

Inside diameter:	29 - 110 mm
Wall thickness:	3.2 - 20 mm
W.T. ratio:	approx 10% O.D.
Lenght:	max. 11 - 12 meter
Fin dia:	max. 200 mm

Eccentricity:	max. 10%
Max. torsion	up to 6 mtr-L = 1,5 mm
	6 - 8 mm-L = 2.25 mm
	8 mtr and longer-L = 3.0 mm
Straightness:	max. 0,2%
	on total length

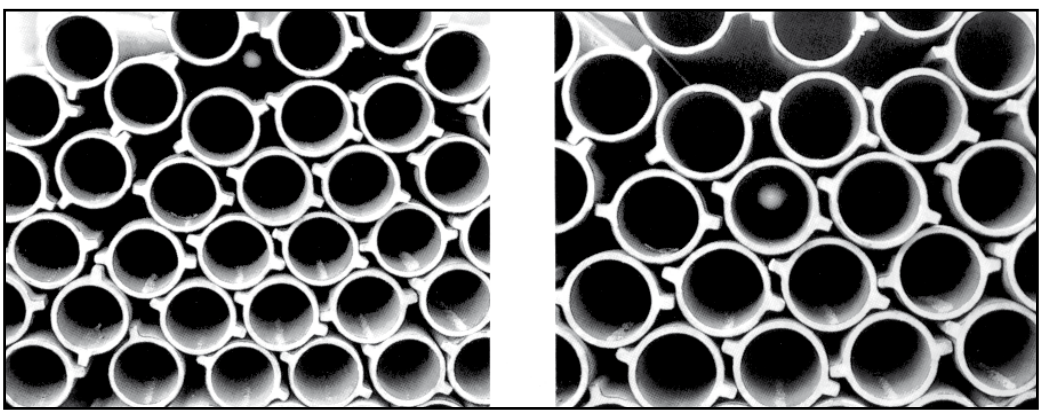
Advantage
The fin tube is seamless and manufactured out of equal raw material.
No welding seams.



Field of application
Boiler water wall constructions
Water power plants
Atomic power stations
Steam generators
Gas recuperators
Flue tube boilers
Fuel element coils

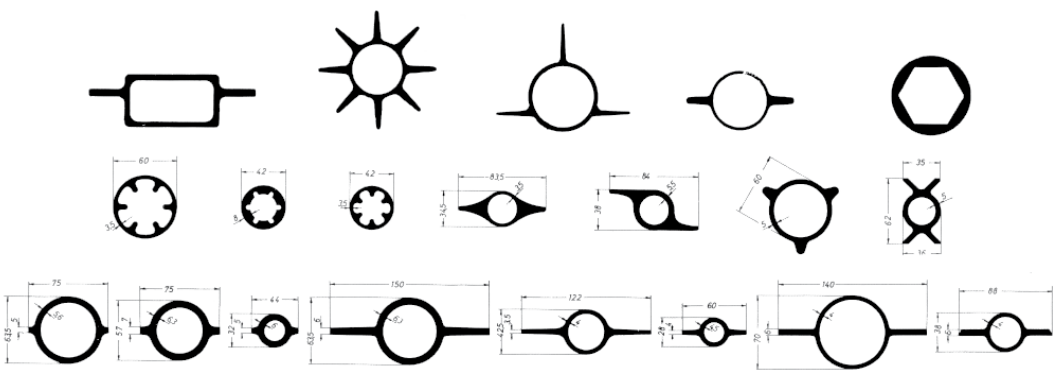
Materials
Mainly Carbon Steels, Ferritic Alloy and Austenitic Stainless Steel, Nickel Alloy

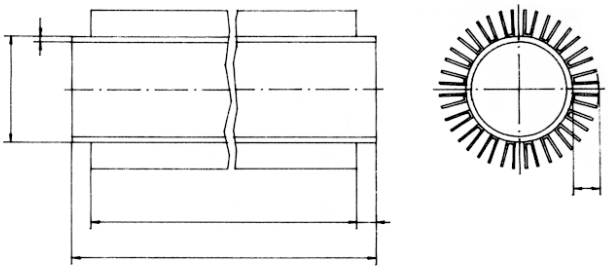
Manufacturing Process
Hot-extrusion process
Cold drawn process



Tube	Width of profile	Typical wall thicknesses 3,2	3,6	4,0	4,5	5,0	5,6	6,2	Fin thickness		
d	e	Weight kg/m							b1	b2	r
25,0	36,0	2,15	2,33	2,50	2,71	2,90			4,5	5,5	5
26,9	37,5	2,39	2,59	2,78	2,98	3,20	3,44	3,71	5,0	6,0	5
30,0	42,5 45,0 47,5	2,72 2,83 2,94	2,95 3,06 3,17	3,17 3,28 3,39	3,41 3,52 3,63	3,66 3,77 3,88	3,95 4,06 4,17	4,28 4,39 4,50	5,0	6,0	5
31,8	45,0 47,5 50,0	2,90 3,02 3,13	3,16 3,27 3,38	3,39 3,51 3,62	3,65 3,77 3,88	3,93 4,05 4,16	4,23 4,35 4,46	4,60 4,72 4,83	5,0	6,5	5
33,7	45,0 47,5 50,0	2,88 3,14 3,26	3,15 3,41 3,53	3,41 3,67 3,79	3,69 3,95 4,07	4,00 4,26 4,38	4,33 4,59 4,71	4,73 4,99 5,11	5,5	7,0	5
38,0	50,0 52,5 57,5	3,55 3,69 3,97	3,86 4,00 4,28	4,16 4,30 4,58	4,49 4,63 4,91	4,85 4,99 5,27	5,25 5,39 5,67	5,37 5,51 5,79	6,0	8,0	6
42,4	52,5 57,5 60,0		4,15 4,42 4,56	4,49 4,76 4,90	4,87 5,14 5,28	5,29 5,56 5,70	5,75 6,02 6,16	6,30 6,57 6,81	6,0	8,0	6
44,5	60,0 65,0		4,69 4,98	5,06 5,35	5,46 5,75	5,91 6,20	6,39 6,68	6,99 7,28	6,5	8,5	6
48,3	65,0 70,0		5,11 5,40	5,52 5,81	5,96 6,25	6,45 6,74	7,00 7,39	7,66 7,95	6,5	8,5	6
51,0	65,0 70,0		5,23 5,55	5,66 5,98	6,13 6,45	6,67 6,98	7,24 7,56	7,95 8,27	7,0	9,0	6
57,0	70,0 75,0			6,21 6,52	6,75 7,06	7,35 7,66	8,02 8,33	8,85 9,16	7,0	9,0	6
60,3	75,0 80,0			6,64 6,95	7,22 7,53	7,87 8,18	8,68 8,89	9,47 9,78	7,0	9,0	6
63,5	80,0 85,0			7,07 7,38	7,68 7,99	8,37 8,68	9,13 9,44	10,07 10,38	7,0	9,0	6
70,0	85,0 90,0			7,73 8,07	8,42 8,76	9,19 9,53	10,03 10,37	11,10 11,44	7,5	9,5	7
76,1	90,0 95,0			8,28 8,61	9,03 9,36	9,88 10,21	10,82 11,15	12,01 12,34	7,5	9,5	7

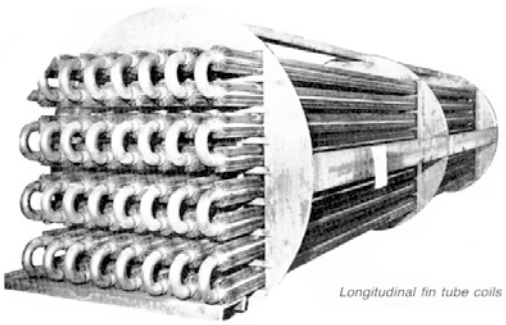
In addition to longitudinal fin tubes, sections of many shapes can be produced by hot extrusion with two or more internal and/or external fins in the size range mentioned on the left page.





Size Range
As per opposite page

Fields of application
Chemical-, Petrochemical-, Oil-,
Power Industry
Heat-Exchangers
Fired Heaters
Gas Coolers and Heaters
Tank Heaters


Longitudinal fin tube coils

Manufacturing process
The longitudinal I/L or U fins are welded onto the base tubed by resistance welding or welding with filler metal.

Advantage
Increase of heat transfer rates for viscous liquids. Perforated fin type used whenever drainage of liquid from fin channels become a problem. Widely used in horizontal heat-ex hangers.

Material
Carbon Steel
Alloy Steel
Stainless Steel
Nickel Alloy
Other Alloys

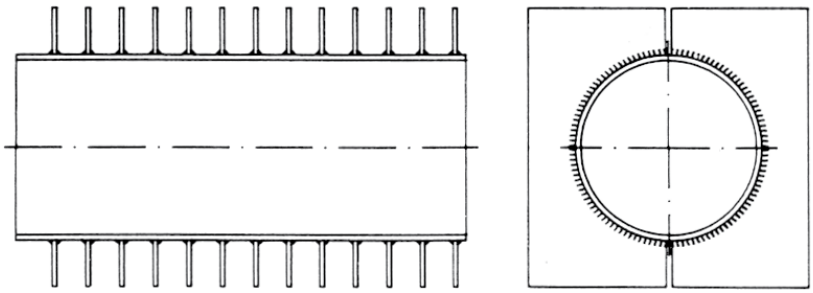
TECHNIFIN® Type "LFW"
Standard Size Range

FINNED TUBE AND PIPE SURFACES square feet per foot of finned length						FINNED TUBE AND PIPE SURFACES m^2/meter of finned length				
O.D. or Nominal Pipe Size	Fin Height				No. of Fins	Fin Height - mm				O.D. or Nominal Pipe Size
	1/4"	1/2"	3/4"	1"		6.35	12.7	19.05	25.4	
3/4" O.D.	0.863	1.529	2.196	2.863	16	0.2627	0.4654	0.6685	0.8715	19.05 mm
7/8" O.D.	0.895	1.562 1.062	2.229 1.895	2.896 2.729	16 3.562	0.2724 20	0.4755 0.3233	0.6785 0.5768	0.8816 0.8307	22.22 mm 1.0843
1" O.D.	0.928	1.595 1.095 1.262	2.262 1.928 2.262	2.928 2.762 3.262	16 3.595 4.262	0.2825 20 24	0.4855 0.3333 0.3842	0.6886 0.5869 0.6886	0.8913 0.8408 0.9930	25.4 mm 1.0944 1.2974
3/4" I.P.S. 1.05" O.D.	0.941 1.108	1.608 1.941 1.275	2.275 2.775 2.275	2.942 3.608 3.275	16 20 4.275	0.2865 0.3373 24	0.4895 0.5909 0.3881	0.6925 0.8447 0.6925	0.8956 1.0983 0.9970	3/4" I.P.S. 26.67 mm 1.3014
1 1/2" I.P.S. 1.9" O.D.	1.497 1.830	2.497 3.163 2.163	3.497 4.497 3.830	4.497 5.830 5.497	24 32 7.163	0.4557 0.5571 40	0.7601 0.9629 0.6584	1.0645 1.3689 1.1659	1.3689 1.7747 1.6734	1 1/2" I.P.S. 48.26 mm 2.1805
2" I.P.S. 2.375" O.D.	1.955 2.288	3.288 3.955	4.622 5.622	5.956 7.288	32 40	0.5951 0.6965	1.0009 1.2040	1.4070 1.7114	1.8131 2.2186	2" I.P.S. 60.32 mm

OBSTRUCTION - square inches						OBSTRUCTION - mm^2				
O.D. or Nominal Pipe Size	Fin Height				No. of Fins	Fin Height - mm				O.D. or Nominal Pipe Size
	1/4"	1/2"	3/4"	1"		6.35	12.7	19.05	25.4	
3/4" O.D.	0.6215	0.7791	0.9367	1.0943	16	400.97	502.64	604.32	706.00	19.05 mm
7/8" O.D.	0.7810	0.9386 0.8259	1.0962 1.0229	1.2538 1.2199	16 1.4169	503.87 20	605.55 532.84	707.22 659.93	808.90 787.03	22.22 mm 914.13
1" O.D.	0.9651	1.1227 1.0100 1.0549	1.2803 1.2070 1.2913	1.4379 1.4040 1.5277	16 1.6010 1.7641	622.64 20 24	724.32 651.61 680.58	826.00 778.71 833.10	927.68 905.80 985.61	25.4 mm 1032.90 1138.13
3/4" I.P.S. 1.05" O.D.	1.0456 1.0905	1.2032 1.2875 1.1354	1.3608 1.4845 1.3718	1.5184 1.6815 1.6082	16 20 1.8446	674.58 703.55 24	776.26 830.64 732.51	877.93 957.74 885.03	979.61 1084.84 1037.55	3/4" I.P.S. 26.67 mm 1190.06
1 1/2" I.P.S. 1.9" O.D.	3.1048 3.1946	3.3412 3.5098 3.2845	3.5776 3.8250 3.6785	3.8140 4.1402 4.0725	24 32 4.4665	2003.09 2061.03 40	2155.61 2264.38 2119.03	2308.12 2467.74 2373.22	2460.64 2671.09 2627.41	1 1/2" I.P.S. 48.26 mm 2882.61
2" I.P.S. 2.375" O.D.	4.7894 4.8793	5.1046 5.2733	5.4198 5.6673	5.7350 6.0613	32 40	3089.93 3147.93	3293.28 3402.12	3496.64 3656.31	3699.99 3910.51	2" I.P.S. 60.32 mm

KEY TO TABLES:

- A tube of 1" O.D. with 24 fins 1/2" high has a total surface area of 0.079 + 0.610 = 0.689 m^2/m
- A tube of 3/4" I.P.S. with 24 fins 1" high has a total surface area of 0.083 + 1.218 = 1.301 m^2/m
- A tube of 2" I.P.S. with 40 fins 1/2" high has a total surface area of 0.189 + 1.016 = 1.205 m^2/m



Standard Size Range Type „S“

Base Tube O.D.:	31.8 - 57 mm
Fin Size:	60 - 145 mm
Fin Pitch:	12.5 - 50 mm
Tube Length:	1 - 10 mm
Fin Thickness:	2 - 3 mm

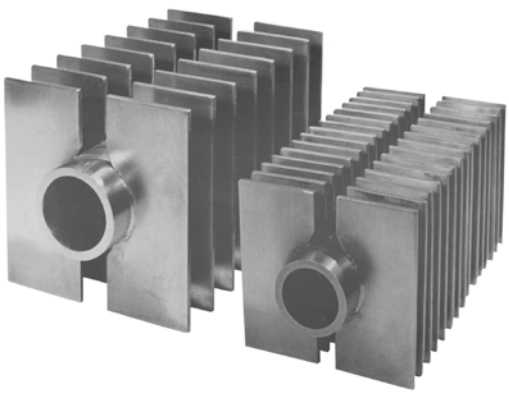
Manufacturing Process:
Square or rectangular fins are welded on a steel base tube.

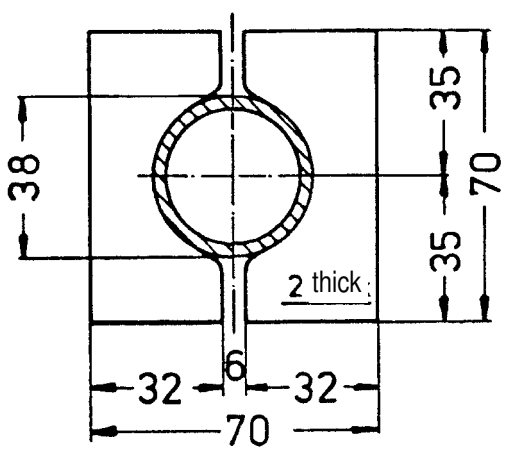
Advantages:
High efficiency / Minimum power loss / easy cleaning

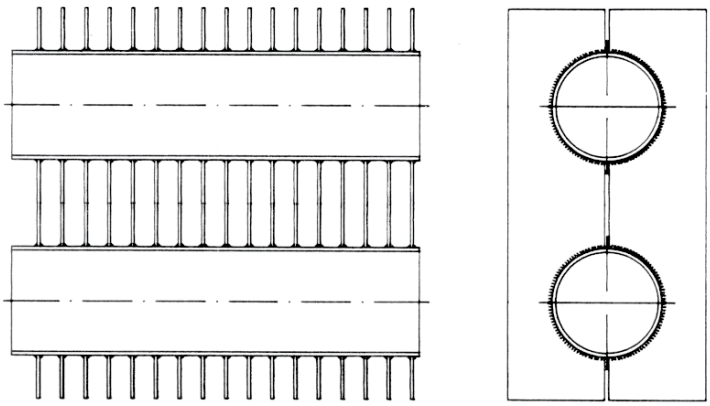
Field of application:
Economisers, Biolers, Heat Exchangers.

Often used in non-corrosive gas streams, minimal resistance to gas flow and the straight gas paths inhibit fouling and ease cleaning.

Example:







TechniFin Typ „DOUBLE S“

Standard Size Range Type „S“

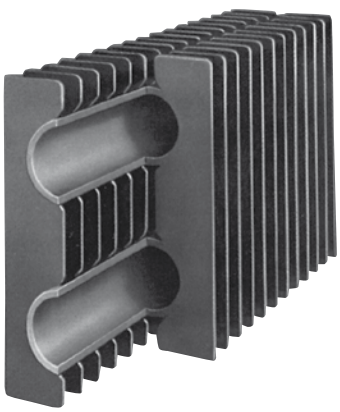
Base Tube O.D.:	31.8 - 57 mm
Fin Size:	60 - 175 mm
Fin Pitch:	10 - 30 mm
Tube Length:	1 - 10 mm
Fin Thickness:	2 - 3 mm

Manufacturing Process:
Square or rectangular fins are welded on two steel base tubes.

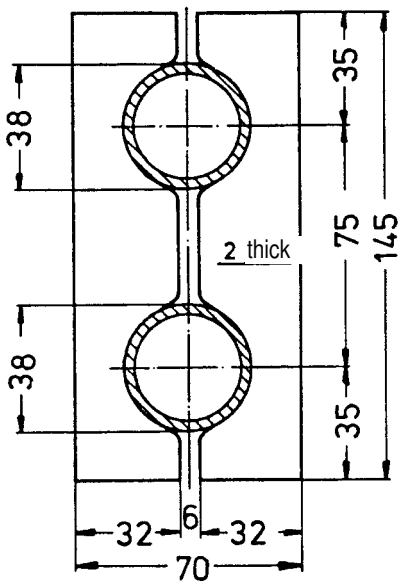
Advantages:
High efficiency / Minimum power loss / easy cleaning

Field of application:
Economisers, Biolers, Heat Exchangers.

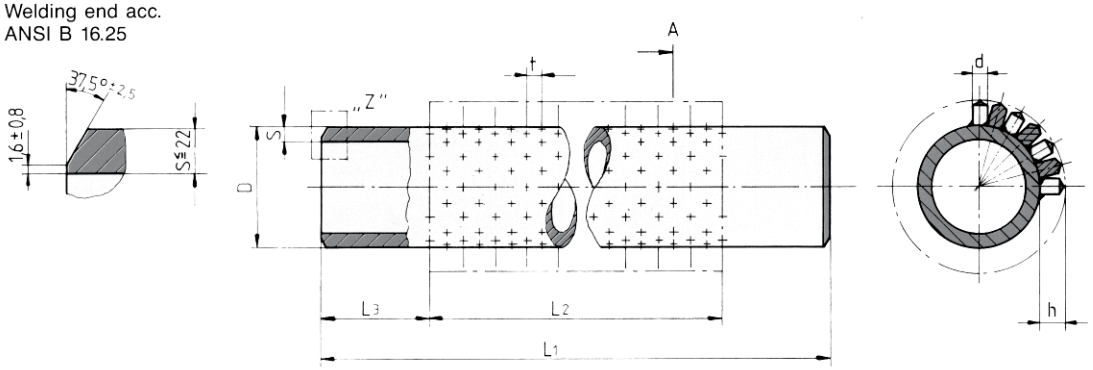
Often used in non-corrosive gas streams, minimal resistance to gas flow and the straight gas paths inhibit fouling and ease cleaning.



Example:



Detail "Z"
Welding end acc.
ANSI B 16.25



L_1 = max. 24 000 mm
L_2 = max. (L_1 - 2 x L_3 min.)
L_3 = min. 20 mm
h = 12,7 - 63,5 mm
d = 8 - 12,7 mm
t Std. = 15,87 mm ≠ 63 Rows / 1 Meter

Fa = Studded Outer Tube Surface Area
Fi = Interior Tube Area
Da = Outside Diameter of Tube

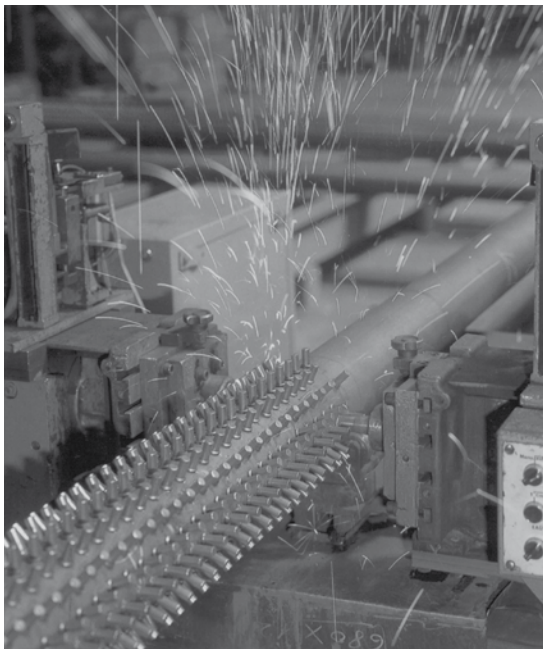
Di = Inside Diameter of Tube
NB = No. of Studs per Row
NRm = No. of Stud Rows per Meter

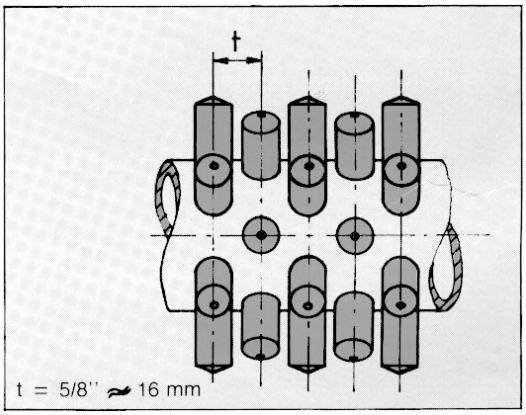
Standard Size Range:
See opposite page

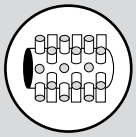
Fields of Application:
Furnaces-, Chemical-, Petrochemical-Industry, Power stations etc. where liquid media under high pressure are to be heated or cooled.

Advantages
Due to their high rigidity, studded tubes can be used even under extreme temperature and pressure conditions.

Manufacturing Process:
Studs are fully automatically welded onto the tube by resistance welding.







Standard Tube Dimensions*							
Outside Diameter		Wallthickness		Max. Number of Studs per Row		Fi	Aspect Ratio** at: NB (max.), T = Stand. d (max.), h (max.)
mm	in.	mm	in.	d = 8 mm	d = 12,7 mm	m^2/m	Fi
60,3	2.375	3,9	0.154	9	7	0,165	7,92
73,0	2.875	5,2	0.203	10	8	0,197	7,66
88,9	3.500	5,5	0.216	13	10	0,245	7,66
101,6	4.000	5,7	0.226	15	12	0,283	7,88
114,3	4.500	6,0	0.237	17	13	0,321	7,57
127,0	5.000	4,0	0.156	18	15	0,374	7,47
141,3	5.563	6,6	0.258	21	17	0,402	7,84
152,4	6.000	4,5	0.179	22	18	0,451	7,44
159,0	6.260	4,5	0.179	23	19	0,471	7,49
168,3	6.625	7,1	0.281	25	20	0,484	7,68
219,1	8.625	8,2	0.322	32	26	0,637	7,60

* The Standard Tube Dimensions given in the above table are taken from typical orders. Of course, we produce studded tubes also with other base tube dimensions in the range 60,3 up to 219,1 mm Outside Diameter.

** Calculation of Aspect Ratio: $\frac{Fi = d \times h \times NB \times NRm + Da}{Di}$

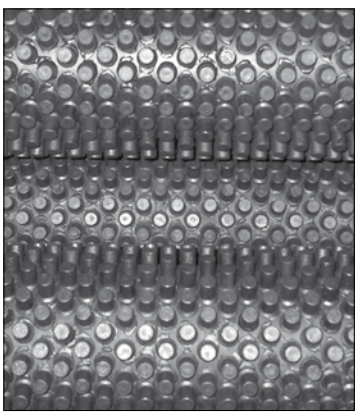
Materials:
Base Tube & Studs
Carbon Steel
Low Alloy Steel
Stainless Steel

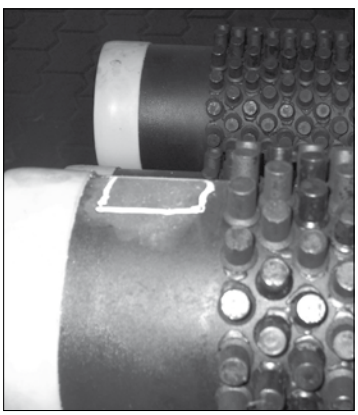
Length:
Up to 24 meters. If necessary with circumferential weld, 100% x-rayed. If required pressure tested.

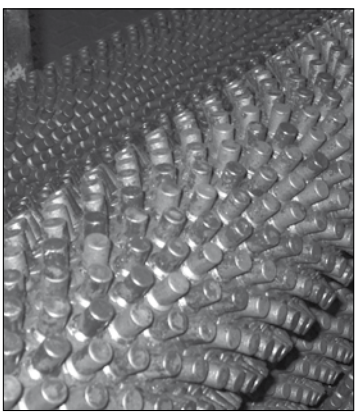
Studs:
General Stud spacing 1/8" (16mm) = 63 Stud rows per meter

Type of Studs:
Cylindrical , elliptical or lens type

Also exotic material combinations or sizes are possible on request!







M S Plain Plates

Thickness (mm)	Section Weight	
	Kg/Sp Metre	Kg/Sq Foot
4.3	33.7	3.13
4.6	36.0	3.34
5	39.2	3.64
6	47.1	4.38
7	55.0	5.11
8	62.8	5.83
9	70.7	6.56
10	78.5	7.29
11	86.3	8.01
12	94.2	8.75
14	109.0	10.13
16	125.6	11.67
18	141.3	13.13
20	157.0	14.58
22	172.7	16.04
25	196.2	18.23
28	219.8	20.42
30	235.5	21.88
32	251.2	23.33
36	282.6	26.25
40	314.0	29.17
45	353.2	32.81
50	392.5	36.46
56	439.6	40.84
63	494.5	45.94
70	549.5	51.05
75	588.75	54.69
80	628.0	58.34
90	706.5	65.63
100	785.0	77.92
110	863.5	80.21
120	942.0	87.51

Chequered Plates, steel

Thickness in mm	Weight kg/m²	Weight per piece/size		
		1000 x 2000	1250 x 2500	1500 x 3000
3	30	60	93	135
4	38	76	119	171
5	46	92	144	207
6	54	108	169	243
8	70	140	219	315
10	86	172	269	387
12	102	204	319	459
15	126	252	394	567
20	166	332	519	747

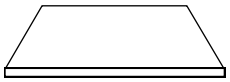
Tear Plates, steel

Thickness in mm	Weight kg/m²	Weight per piece/size		
		1000 x 2000	1250 x 2500	1500 x 3000
3	26	52	82	117
4	34	68	106	153
5	42	84	131	189
6	51	102	159	230
8	67	134	209	302
10	83	166	259	374
12	99	198	309	466
15	123	246	384	554
20	163	326	509	737

Duett W2 EN AW-5754 H111/114 (AlMg3 W20)

Plate Size in mm	Weight in kg/ piece
1,5/2,0 x 1000 x 2000	8,700
1,5/2,0 x 1250 x 2500	13,600
1,5/2,0 x 1500 x 3000	19,600
2,5/4,0 x 1000 x 2000	15,100
2,5/4,0 x 1250 x 2500	23,500
2,5/4,0 x 1500 x 3000	33,900
3,0/4,5 x 1000 x 2000	18,700
3,0/4,5 x 1250 x 2500	29,100
3,0/4,5 x 1500 x 3000	42,000

Plate Size in mm	Weight in kg/piece
3,5/5,0 x 1000 x 2000	20,500
3,5/5,0 x 1250 x 2500	32,000
3,5/5,0 x 1500 x 3000	46,100
5,0/6,5 x 1000 x 2000	28,600
5,0/6,5 x 1250 x 2500	44,600
5,0/6,5 x 1500 x 3000	64,300
8,0/9,5 x 1000 x 2000	44,800
8,0/9,5 x 1250 x 2500	69,900
8,0/9,5 x 1500 x 3000	100,700



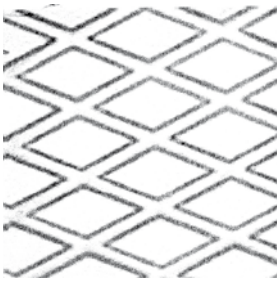
Quintett W5 EN AW-5754 H111/114 (AlMg3 W20)

Plate Size in mm	Weight in kg/ piece
2,0/3,5 x 1000 x 2000	12,050
2,0/3,5 x 1250 x 2500	18,800
2,0/3,5 x 1500 x 3000	27,050
2,5/4,0 x 1000 x 2000	15,300
2,5/4,0 x 1250 x 2500	23,900
2,5/4,0 x 1500 x 3000	34,500
3,0/4,5 x 1000 x 2000	18,050
3,0/4,5 x 1250 x 2500	28,500
3,0/4,5 x 1500 x 3000	40,550
3,5/5,0 x 1000 x 2000	20,700
3,5/5,0 x 1250 x 2500	32,400

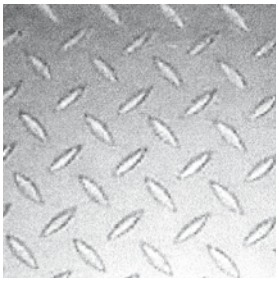
Plate Size in mm	Weight in kg/piece
3,5/5,0 x 1500 x 3000	46,600
4,0/5,5 x 1000 x 2000	23,050
4,0/5,5 x 1250 x 2500	36,000
4,0/5,5 x 1500 x 3000	51,850
5,0/6,5 x 1000 x 2000	28,800
5,0/6,5 x 1250 x 2500	45,000
5,0/6,5 x 1500 x 3000	64,800
8,0/9,5 x 1000 x 2000	45,000
8,0/9,5 x 1250 x 2500	70,400
8,0/9,5 x 1500 x 3000	101,300

Duett Pattern

Quintett Pattern

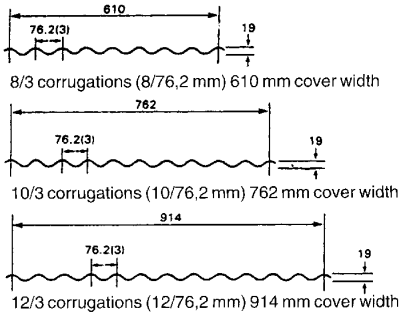


Diamond Pattern



Tear-Drop Pattern

Profile and Cover Width



Description	Width
Sheets before corrugating	
8/3 corrugations	743
10/3 corrugations	908
12/3 corrugations	1070
Sheets after corrugating (distance between the crowns of the outisde corrugations)	
8/3 corrugations	610 ± 5
10/3 corrugations	762 ± 5
12/3 corrugations	908 ± 6

SIZE (mm)	UNIT WEIGHT (Kg/m)	SIZE (mm)	UNIT WEIGHT (Kg/m)	SIZE (mm)	UNIT WEIGHT (Kg/m)
80 x 5	4.25	180 x 9	16.22	280 x 11	33.5
80 x 6	4.88	180 x 10	17.63	280 x 12	35.7
100 x 7	6.86	180 x 11	19.04	280 x 13	37.9
100 x 8	7.65	200 x 9	18.57	300 x 11	36.7
120 x 6	7.32	200 x 10	20.14	300 x 12	39.09
120 x 7	8.26	200 x 11	21.71	300 x 13	41.44
120 x 8	9.20	200 x 12	23.28	320 x 12	42.6
140 x 7	9.75	220 x 10	22.77	320 x 13	45.09
140 x 8	10.85	220 x 11	24.50	320 x 14	47.6
140 x 10	13.05	220 x 12	26.22	340 x 12	46.2
160 x 7	11.46	240 x 10	25.50	340 x 13	48.86
160 x 8	12.72	240 x 11	27.39	340 x 14	51.5
160 x 9	13.97	240 x 12	29.27	370 x 13	54.7
160 x 11	16.49	260 x 10	28.35	370 x 14	57.6
180 x 8	14.80	260 x12	32.43	370 x 15	60.5

Tear Plates

Duett W2	
Abmessung mm	Gewicht kg/pc.
1,5/2,0 x 1000 x 2000	8,700
1,5/2,0 x 1250 x 2500	13,600
1,5/2,0 x 1500 x 3000	19,600
2,5/4,0 x 1000 x 2000	15,100
2,5/4,0 x 1250 x 2500	23,500
2,5/4,0 x 1500 x 3000	33,900
3,0/4,5 x 1000 x 2000	18,700
3,0/4,5 x 1250 x 2500	29,100
3,0/4,5 x 1500 x 3000	42,000
3,5/5,0 x 1000 x 2000	20,500
3,5/5,0 x 1250 x 2500	32,000
3,5/5,0 x 1500 x 3000	46,100
5,0/6,5 x 1000 x 2000	28,600
5,0/6,5 x 1250 x 2500	44,600
5,0/6,5 x 1500 x 3000	64,300
8,0/9,5 x 1000 x 2000	44,800
8,0/9,5 x 1250 x 2500	69,900
8,0/9,5 x 1500 x 3000	100,700

Quintett W5	
Abmessung mm	Gewicht kg/pc.
2,0/3,5 x 1000 x 2000	12,050
2,0/3,5 x 1250 x 2500	18,800
2,0/3,5 x 1500 x 3000	27,050
2,5/4,0 x 1000 x 2000	15,300
2,5/4,0 x 1250 x 2500	23,900
2,5/4,0 x 1500 x 3000	34,500
3,0/4,5 x 1000 x 2000	18,050
3,0/4,5 x 1250 x 2500	28,500
3,0/4,5 x 1500 x 3000	40,550
3,5/5,0 x 1000 x 2000	20,700
3,5/5,0 x 1250 x 2500	32,400
3,5/5,0 x 1500 x 3000	46,600
4,0/5,5 x 1000 x 2000	23,050
4,0/5,5 x 1250 x 2500	36,000
4,0/5,5 x 1500 x 3000	51,850
5,0/6,5 x 1000 x 2000	28,800
5,0/6,5 x 1250 x 2500	45,000
5,0/6,5 x 1500 x 3000	64,800
8,0/9,5 x 1000 x 2000	45,000
8,0/9,5 x 1250 x 2500	70,400
8,0/9,5 x 1500 x 3000	101,300

Weight Table

width in mm	thickness in mm																				
	2	3	4	5	6	8	9	10	12	14	15	16	18	20	25	30	35	40	45	50	60
4	0,06	0,09																			
5	0,08	0,12	0,16																		
6	0,09	0,14	0,19	0,24																	
8	0,13	0,19	0,25	0,32	0,38																
10	0,16	0,24	0,31	0,39	0,47	0,63	0,71														
12	0,19	0,28	0,38	0,47	0,57	0,75	0,85	0,94													
14	0,22	0,33	0,44	0,55	0,66	0,88	0,99	1,10	1,32												
15	0,24	0,35	0,47	0,59	0,71	0,94	1,06	1,18	1,41	1,65											
16	0,25	0,38	0,50	0,63	0,75	1,01	1,13	1,26	1,51	1,76	1,88										
18	0,28	0,42	0,57	0,71	0,85	1,13	1,27	1,41	1,70	1,98	2,12	2,26									
20	0,31	0,47	0,63	0,79	0,94	1,26	1,41	1,57	1,88	2,20	2,36	2,51	2,83								
22	0,34	0,52	0,69	0,86	1,04	1,38	1,55	1,73	2,07	2,42	2,59	2,76	3,11	3,45							
24	0,38	0,57	0,75	0,94	1,13	1,51	1,70	1,88	2,26	2,64	2,83	3,01	3,39	3,77							
25	0,39	0,59	0,79	0,98	1,18	1,57	1,77	1,96	2,36	2,75	2,94	3,14	3,53	3,93							
26	0,41	0,61	0,82	1,02	1,23	1,63	1,84	2,04	2,45	2,86	3,06	3,27	3,67	4,08							
28	0,44	0,66	0,88	1,10	1,32	1,76	1,98	2,20	2,64	3,08	3,30	3,52	3,96	4,40	5,50						
30	0,47	0,71	0,94	1,18	1,41	1,88	2,12	2,36	2,83	3,30	3,53	3,i7	4,24	4,71	5,89						
32	0,50	0,75	1,00	1,26	1,51	2,01	2,26	2,51	3,01	3,52	3,77	4,02	4,52	5,02	6,28	7,54					
35	0,55	0,82	1,10	1,37	1,65	2,20	2,47	2,75	3,30	3,85	4,12	4,40	4,95	5,50	6,87	8,24					
40	0,63	0,94	1,26	1,57	1,88	2,51	2,83	3,14	3,77	4,40	4,71	5,02	5,65	6,28	7,85	9,42	11,0				
45	0,71	1,06	1,41	1,77	2,12	2,83	3,18	3,53	4,24	4,95	5,30	5,65	6,36	7,07	8,83	10,6	12,4	14,2			
50	0,78	1,18	1,57	1,96	2,36	3,14	3,53	3,93	4,71	5,50	5,89	6,28	7,07	7,85	9,81	11,8	13,7	15,7	17,6		
55	0,86	1,30	1,73	2,16	2,59	3,45	3,89	4,32	5,18	6,05	6,48	6,91	7,77	8,64	10,8	13,0	15,1	17,3	19,4	21,6	
60	0,94	1,41	1,88	2,36	2,83	3,77	4,24	4,71	5,65	6,59	7,07	7,54		8,48	9,42	11,8	14,1	16,5	18,8	21,2	23,6
65	1,02	1,53	2,04	2,55	3,06	4,08	4,59	5,10	6,12	7,14	7,65	8,16	9,18	10,2	12,8	15,3	17,9	20,4	22,9	25,5	
70	1,10	1,65	2,20	2,75	3,30	4,40	4,95	5,50	6,59	77,69	8,24	8,79	9,89	11,0	13,7	16,5	19,2	22,0	24,7	27,5	
75	1,18	1,77	2,36	2,94	3,53	4,71	5,30	5,89	7,07	8,24	8,83	9,42	10,6	11,8	14,7	17,7	20,6	23,6	26,5	29,4	
80	1,26	1,88	2,51	3,14	3,77	5,02	5,65	6,28	7,54	8,79	9,42	10,0	11,3	12,6	15,7	18,8	22,0	25,1	28,3	31,4	37,7
85	1,33	2,00	2,67	3,34	4,00	5,34	6,01	6,67	8,01	9,34	10,0	10,7	12,0	13,3	16,7	20,0	23,4	26,7	30,0	33,4	40,0
90	1,41	2,12	2,83	3,53	4,24	5,65	6,36	7,07	8,48	9,89	10,6	11,3	12,7	14,1	17,7	21,2	24,7	28,3	31,8	35,3	42,4
95	1,49	2,24	2,98	3,73	4,47	5,97	6,71	7,46	8,95	10,4	11,2	11,9	13,4	14,9	18,6	22,4	26,1	29,8	33,6	37,4	44,8
100	1,57	2,36	3,14	3,93	4,71	6,28	7,07	7,85	9,42	11,0	11,8	12,6	14,1	15,7	19,6	23,6	27,5	31,4	35,3	39,3	46,8
110	1,73	2,59	3,45	4,32	5,18	6,91	7,77	8,64	10,4	12,1	13,0	13,8	15,5	17,3	21,6	25,9	30,2	34,5	38,8	43,2	51,8
120	1,88	2,83	3,77	4,71	5,65	7,54	8,48	9,42	11,3	13,2	14,1	15,1	17,0	18,8	23,6	28,3	33,0	37,7	42,4	47,1	56,5
130	2,04	3,06	4,08	5,10	6,12	8,16	9,18	10,2	12,3	14,3	15,3	16,3	18,4	20,4	25,5	30,6	35,7	40,8	45,9	51,0	61,3
140	2,20	3,30	4,40	55,50	6,59	8,79	9,89	11,0	13,2	15,4	16,5	17,0	19,8	22,0	27,5	33,0	38,5	44,0	49,5	55,0	66,0
150	2,36	3,53	4,71	5,89	7,07	9,42	10,6	11,8	14,1	16,5	17,7	18,8	21,2	23,6	29,4	35,3	41,2	47,1	53,0	58,9	70,7
160	2,51	3,77	5,02	6,28	7,51	10,1	11,3	12,6	15,1	17,6	18,8	20,1	22,6	25,1	31,4	37,7	44,0	50,2	56,5	62,8	75,4
180	2,83	4,24	5,65	7,07	8,48	11,3	12,7	14,1	17,0	19,8	21,2	22,6	25,4	28,3	35,3	42,4	49,5	56,5	63,6	70,7	84,8
200	3,14	4,71	6,28	7,85	9,42	12,6	14,1	15,7	18,8	22,0	23,6	25, 1	28,3	31,4	39,3	47,1	55,0	62,8	70,6	78,5	94,2
250	3,93	5,89	7,85	9,81	11,8	15,7	17,7	19,6	23,6	27,5	29,4	31,4	35,3	39,3	49,1	58,9	68,7	78,5	88,3	98,1	118,0
300	4,71	7,07	9,42	11,8	14,1	18,8	21,2	23,6	28,3	33,0	35,3	37,7	42,3	47,1	58,9	70,7	82,4	94,2	106,0	118,0	141,0

HE A, HE B, HE C and HE M shapes in accordance with Euronorm 63, 62

Section	kg/m	Dimensions h mm	b mm	a mm	e mm
HE 100 AA	12,2	91	100	4,2	5,5
HE 100 A	16,7	96	100	5,0	8,0
DIL 100	19,8	100	100	5,0	10,0
HE 100 B	20,4	100	100	6,0	10,0
HE 100 M	41,8	120	106	12,0	20,0
HE 120 AA	14,6	109	120	4,2	5,5
HE 120 A	19,9	114	120	5,0	8,0
DIL 120	25,5	120	120	5,0	11,0
HE 120 B	26,7	120	120	6,5	11,0
HE 120 M	52,1	140	126	12,5	21,0
HE 140 AA	18,1	128	140	4,3	6,0
HE 140 A	24,7	133	140	5,5	8,5
DIL 140	31,9	140	140	5,0	12,0
HE 140 B	33,7	140	140	7,0	12,0
HE 140 M	63,2	160	146	13,0	22,0
HE 160 AA	23,8	148	160	4,5	7,0
HE 160 A	30,4	152	160	6,0	9,0
DIL 160	39,4	160	160	5,0	13,0
HE 160 B	42,6	160	160	8,0	13,0
HE 160 M	76,2	180	166	14,0	23,0
HE 180 AA	28,7	167	180	5,0	7,5
HE 180 A	35,5	171	180	6,0	9,5
DIL 180	47,6	180	180	5,5	14,0
HE 180 B	51,2	180	180	8,5	14,0
HE 180 M	88,9	200	186	14,5	24,0
HE 200 AA	34,6	186	200	5,5	8,0
HE 200 A	42,3	190	200	6,5	10,0
DIL 200	57,3	200	200	6,0	15,0
HE 200 B	61,3	200	200	9,0	15,0
HE 200 M	103,0	220	206	15,0	25,0
HE 220 AA	40,0	205	220	6,0	8,5
HE 220 A	50,5	210	220	7,0	11,0
DIL 220	67,0	220	220	6,5	16,0
HE 220 B	71,5	220	220	9,5	16,0
HE 220 M	117,0	240	226	15,5	26,0
HE 240 AA	47,4	224	240	6,5	9,0
HE 240 A	60,3	230	240	7,5	12,0
DIL 240	78,3	240	240	7,0	17,0
HE 240 B	83,2	240	240	10,0	17,0
HE 240 M	157,0	270	248	18,0	32,0
HE 260 AA	54,1	244	260	6,5	9,5
HE 260 A	68,2	250	260	7,5	12,5
DIL 260	88,6	260	260	7,5	17,5
HE 260 B	93,0	260	260	10,0	17,5
HE 260 M	172,0	290	268	18,0	32,5
HE 280 AA	61,2	264	280	7	10
HE 280 A	76,4	270	280	8	13
DIL 280	98,3	280	280	8	18
HE 280 B	103	280	280	10,5	18
HE 280 M	189	310	288	18,5	33
HE 300 AA	69,8	283	300	7,5	10,5
HE 300 A	88,3	290	300	8,5	14
DIL 300	112	300	300	8,5	19
HE 300 B	117	300	300	11	19
HE 300 C	177	320	305	16	29
HE 300 M	238	340	310	21	39
HE 320 AA	74,2	301	300	8	11
HE 320 A	97,6	310	300	9	15,5
DIL 320	121	320	300	9	20,5
HE 320 B	127	32	0300	11,5	20,5
HE 320 M	245	359	309	21	40

Section	kg/m	Dimensions h mm	b mm	a mm	e mm
HE 340 AA	78,9	320	300	8,5	11,5
HE 340 A	105	330	300	9,5	16,5
DIL 340	128	340	300	9,5	21,5
HE 340 B	134	340	300	12	21,5
HE 340 M	238	377	309	21	40
HE 360 AA	83,7	339	300	9	12
HE 360 A	112	350	300	10	17,5
DIL 360	136	360	300	10	22,5
HE 360 B	142	360	300	12,5	22,5
HE 360 M	250	395	309	21	40
HE 400 AA	92,4	378	300	9,5	13
HE 400 A	125	390	300	11	19
DIL 400	148	400	300	11	24
HE 400 B	155	400	300	13,5	24
HE 400 M	256	432	307	21	40
HE 450 AA	99,7	425	300	10	12,5
HE 450 A	140	440	300	11,5	21
DIL 450	163	450	300	11,5	26
HE 450 B	171	450	300	14	26
HE 450 M	263	478	307	21	40
HE 500 AA	107	472	300	10,5	14
HE 500 A	155	490	300	12	23
DIL 500	179	500	300	12	28
HE 500 B	187	500	300	14,5	28
HE 500 M	270	524	306	21	40
HE 550 AA	120	522	300	11,5	15
HE 550 A	166	540	300	12,5	24
DIL 550	190	550	300	12,5	29
HE 500 B	199	550	300	15	29
HE 500 M	278	572	306	21	40
HE 600 AA	129	571	300	12	15,5
HE 600 A	178	590	300	13	25
DIL 600	201	600	300	13	30
HE 600 B	212	600	300	15,5	30
HE 600 M	285	620	305	21	40
HE 650 AA	138	62	0300	12,5	16
HE 650 A	190	640	300	13,5	26
DIL 650 B	225	650	300	16	31
HE 650 M	293	668	305	21	40
HE 700 AA	150	670	300	13	17
HE 700 A	204	690	300	14,5	27
DIL 700 B	241	700	300	17	32
HE 700 M	301	716	304	21	40
HE 800 AA	172	770	300	14	18
HE 800 A	224	790	300	15	28
DIL 800 B	262	800	300	17,5	33
HE 800 M	317	814	303	21	40
HE 900 AA	198	870	300	15	20
HE 900 A	252	890	300	16	30
HE 900 B	291	900	300	18,5	35
HE 900 M	333	910	302	21	40
HE 1000 AA	222	970	300	16	21
HE 1000 A	990	300	16,5	31	
DIL 1000 B	314	1000	300	19	36
HE 1000 M	349	1008	302	21	40

IPE 80-600 shapes in accordance with Euronorm 19-57

Section		kg/m	Dimensions h mm	b mm	a mm	e mm
IPE	80	6,00	80,0	46	3,8	5,2
IPE	100	8,10	100,0	55	4,1	5,7
IPE A	120	8,66	117,6	64	3,8	5,1
IPE	120	10,40	120,0	64	4,4	6,3
IPE A	140	10,50	137,4	73	3,8	5,6
IPE	140	12,90	140,0	73	4,7	6,9
IPE R	140	14,40	142,0	72	5,3	7,8
IPE A	160	12,70	157,0	82	4,0	5,9
IPE	160	15,80	160,0	82	5,0	7,4
IPE R	160	17,70	162,0	81	5,6	8,5
IPE A	180	15,40	177,0	91	4,3	6,5
IPE	180	18,80	180,0	91	5,3	8,0
IPE O	180	21,30	182,0	95	6,0	9,0
IPE R	180	22,10	183,0	89	6,4	9,5
IPE A	200	18,40	197,0	100	4,5	7,0
IPE	200	22,40	200,0	100	5,6	8,5
IPE O	200	25,10	202,0	105	6,2	9,5
IPE R	200	26,60	204,0	97	6,6	10,5
IPE A	220	22,20	217,0	110	5	7,7
IPE	220	26,20	220,0	110	5,9	9,2
IPE O	220	29,40	222,0	112	6,6	10,2
IPE R	220	31,60	25,0	108	6,7	11,8
IPE A	240	26,20	237,0	120	5,2	8,3
IPE	240	30,70	240,0	120	6,2	9,8
IPE O	240	34,30	242,0	122	7,0	10,8
IPE R	240	37,30	245,0	118	7,5	12,3
IPE A	270	30,70	267,0	135	5,5	8,7
IPE	270	36,10	270,0	135	6,6	10,2
IPE O	270	42,30	274,0	136	7,5	12,2
IPE R	270	44,00	276,0	133	7,7	13,1
IPE A	300	36,50	297,0	150	6,1	9,2
IPE	300	42,20	300,0	150	7,1	10,7
IPE O	300	49,30	304,0	152	8,0	12,7
IPE R	300	51,70	306,0	147	8,5	13,7

Section		kg/m	Dimensions h mm	b mm	a mm	e mm
IPE A	330	43,00	327,0	160	6,5	10,0
IPE	330	49,10	330,0	160	7,5	11,5
IPE O	330	57,00	334,0	162	8,5	13,5
IPE R	330	60,30	336,0	158	9,2	14,5
IPE A	360	50,2	357,6	170	6,6	11,5
IPE	360	57,1	360	170	8,0	12,7
IPE O	360	66,0	364	172	9,2	14,7
IPE R	360	70,3	366	167	9,9	16,0
IPE A	400	57,4	397	180	7,0	12,0
IPE	400	66,3	400	187	8,6	13,5
IPE O	400	75,7	404	182	9,7	15,5
IPE R	400	81,5	407	178	10,6	17,0
IPE V	400	84,0	408	182	10,6	17,5
IPE A	450	67,2	447	190	7,6	13,1
IPE	450	77,6	450	190	9,4	14,6
IPE O	450	92,4	456	192	11,0	17,6
IPE R	450	95,2	458	188	11,3	18,6
IPE V	450	104,0	460	194	12,4	19,6
IPE A	500	79,4	497	200	8,4	14,5
IPE	500	90,7	500	200	10,2	16,0
IPE O	500	107,0	506	202	12,0	19,0
IPE R	500	111,0	508	197	12,6	20,0
IPE V	500	129,0	514	204	14,2	23,0
IPE A	550	92,1	547	210	9,0	15,7
IPE	550	106,0	550	210	11,1	17,2
IPE O	550	123,0	556	212	12,7	20,2
IPE R	550	134,0	560	210	14,0	22,2
IPE V	550	129,0	514	204	14,2	23,0
IPE A	600	108,0	597	220	9,8	17,5
IPE	600	122,0	600	220	12,0	19,0
IPE O	600	144,0	608	218	14,0	23,0
IPE R	600	154,0	610	224	15,0	24,0
IPE V	600	184,0	618	228	18,0	28,0
IPE 750 x 137		137,0	753	563	11,5	17,0
IPE 750 x 147		147,0	753	265	13,2	17,0
IPE 750 x 161		161,0	758	266	13,8	19,3
IPE 750 x 173		173,0	762	267	14,4	21,6
IPE 750 x 185		185,0	766	267	14,9	23,6
IPE 750 x 196		196,0	770	268	15,6	25,4
IPE 750 x 210		210,0	775	268	16,0	28,0
IPE 750 x 222		222,0	778	269	17,0	29,5

IPN

Eurpean Standard Beams

Flange Slope 14%

IPN I	Dimensions h mm	b mm	a mm	e mm
80	80	42	3,9	5,9
100	100	50	4,5	6,8
120	120	58	5,1	7,7
140	140	66	5,7	8,6
160	160	74	6,3	9,5
180	180	82	6,9	10,4
200	200	90	7,5	11,3
220	220	98	8,1	12,2
240	240	106	8,7	13,1
260	260	113	9,4	14,1
280	280	119	10,1	15,2
300	300	125	10,8	16,2

IPN I	Dimensions h mm	b mm	a mm	e mm
320	320	131	11,5	17,3
340	340	137	12,2	18,3
360	360	143	13,0	19,5
380	380	149	13,7	20,5
400	400	155	14,4	21,6
425	425	163	15,3	23,0
450	450	170	16,2	24,3
475	475	178	17,1	25,6
500	500	185	18,0	27,0
550	550	200	19,0	30,0
600	600	215	21,6	32,4

Size Thickness		
A	t	kg/m
20 x 20	x 2	0,60
20 x 20	x 2,5	0,74
20 x 20	x 3	0,88
20 x 20	x 4	1,14
25 x 25	x 2	0,76
25 x 25	x 2,5	0,94
25 x 25	x 3	1,12
25 x 25	x 4	1,45
25 x 25	x 4,5	1,62
25 x 25	x 5	1,77
25 x 25	x 6	2,08
30 x 30	x 2	0,93
30 x 30	x 2,5	1,15
30 x 30	x 3	1,37
30 x 30	x 4	1,78
30 x 30	x 5	2,18
30 x 30	x 6	2,57
35 x 35	x 2,5	1,34
35 x 35	x 3	1,60
35 x 35	x 3,5	1,87
35 x 35	x 4	2,10
35 x 35	x 4,5	2,33
35 x 35	x 5	2,57
35 x 35	x 6	3,04
38 x 38	x 2,5	1,49
38 x 38	x 3	1,75
38 x 38	x 4	2,28
38 x 38	x 5	2,82
38 x 38	x 6	3,33
40 x 40	x 3	1,84
40 x 40	x 3,5	2,15
40 x 40	x 4	2,42
40 x 40	x 5	2,97
40 x 40	x 6	3,52
40 x 40	x 7	4,04
40 x 40	x 8	4,55
45 x 45	x 3	2,09
45 x 45	x 4	2,74
45 x 45	x 4,5	3,06
45 x 45	x 5	3,38
45 x 45	x 6	4,00
45 x 45	x 7	4,52
45 x 45	x 8	5,19
50 x 50	x 3	2,36
50 x 50	x 4	3,07
50 x 50	x 4,5	3,41
50 x 50	x 5	3,77
50 x 50	x 6	4,47
50 x 50	x 7	5,15
50 x 50	x 8	582
50 x 50	x 9	6,47
50 x 50	x 10	7,06
55 x 55	x 4	3,37
55 x 55	x 5	4,18
55 x 55	x 5,5	4,57
55 x 55	x 6	4,95
55 x 55	x 8	6,46
55 x 55	x 10	7,90
60 x 60	x 4	3,70
60 x 60	x 5	4,57
60 x 60	x 6	5,42
60 x 60	x 7	6,25
60 x 60	x 8	7,09
60 x 60	x 10	8,69
65 x 65	x 5	4,95
65 x 65	x 6	5,91
65 x 65	x 7	6,83
65 x 65	x 8	7,72
65 x 65	x 9	8,62
65 x 65	x 10	9,49
65 x 65	x 11	10,34

Size Thickness		
A	t	kg/m
70 x 70	x 5	5,37
70 x 70	x 6	6,38
70 x 70	x 7	7,38
70 x 70	x 9	9,37
70 x 70	x 11	11,23
75 x 75	x 5	5,76
75 x 75	x 6	6,86
75 x 75	x 7	7,94
75 x 75	x 8	9,03
75 x 75	x 10	11,07
75 x 75	x 12	13,10
80 x 80	x 6	7,30
80 x 80	x 8	9,66
80 x 80	x 9	10,80
80 x 80	x 10	11,90
80 x 80	x 12	14,05
80 x 80	x 14	16,10
90 x 90	x 6	8,25
90 x 90	x 8	10,90
90 x 90	x 9	12,17
90 x 90	x 10	13,45
90 x 90	x 11	14,68
90 x 90	x 12	15,93
90 x 90	x 13	17,11
90 x 90	x 16	20,76
100 x 100	x 6	9,30
100 x 100	x 8	12,18
100 x 100	x 10	15,07
100 x 100	x 12	17,82
100 x 100	x 14	20,57
100 x 100	x 15	21,90
100 x 100	x 16	23,30
110 x 110	x 8	13,40
110 x 110	x 10	16,60
110 x 110	x 12	19,70
110 x 110	x 14	22,80
110 x 110	x 16	25,80
120 x 120	x 8	14,70
120 x 120	x 10	18,20
120 x 120	x 11	20,81
120 x 120	x 12	21,60
120 x 120	x 13	23,30
120 x 120	x 15	26,60
120 x 120	x 18	31,60
130 x 130	x 8	15,90
130 x 130	x 10	19,70
130 x 130	x 12	23,60
130 x 130	x 14	27,20
130 x 130	x 16	30,90
130 x 130	x 19	36,20
140 x 140	x 13	27,50
140 x 140	x 15	31,40
140 x 140	x 16	33,40
140 x 140	x 17	35,30
140 x 140	x 19	39,10
140 x 140	x 20	41,00
150 x 150	x 10	23,00
150 x 150	x 12	27,30
150 x 150	x 14	31,60
150 x 150	x 15	33,80
150 x 150	x 16	35,90
150 x 150	x 18	40,10
150 x 150	x 20	44,60
160 x 160	x 15	36,20
160 x 160	x 17	40,70
160 x 160	x 19	45,10
180 x 180	x 15	40,90
180 x 180	x 16	43,50
180 x 180	x 18	48,60
180 x 180	x 20	53,70

Size Thickness		
A	t	kg/m
200 x 200	x 15	45,60
200 x 200	x 16	48,50
200 x 200	x 18	54,20
200 x 200	x 20	59,90
200 x 200	x 22	65,60

Size Thickness		
A	t	kg/m
250 x 250	x 25	93,60
250 x 250	x 28	104,00
250 x 250	x 32	118,00
250 x 250	x 35	128,00

Unequal Angles

Size Thickness		
A	t	kg/m
30 x 20	x 3	1,12
30 x 20	x 4	1,46
30 x 20	x 5	1,77
40 x 20	x 3	1,35
40 x 20	x 4	1,77
40 x 20	x 5	2,17
40 x 20	x 6	2,56
45 x 30	x 3	1,71
45 x 30	x 4	2,25
45 x 30	x 5	2,77
50 x 40	x 3	2,06
50 x 40	x 4	2,72
50 x 40	x 5	3,35
50 x 40	x 6	3,98
60 x 30	x 3	2,06
60 x 30	x 5	3,37
60 x 30	x 6	3,98
60 x 30	x 7	4,59
60 x 40	x 3	2,33
60 x 40	x 4	3,05
60 x 40	x 5	3,76
60 x 40	x 6	4,46
60 x 40	x 7	5,14
65 x 50	x 5	4,35
65 x 50	x 6	5,16
65 x 50	x 7	5,96
65 x 50	x 8	6,76
65 x 50	x 9	7,52
75 x 50	x 5	4,74
75 x 50	x 6	5,64
75 x 50	x 6,5	6,10
75 x 50	x 7	6,54
75 x 50	x 8	7,40
75 x 50	x 9	8,24
75 x 50	x 10	8,97
75 x 55	x 5	4,85
75 x 55	x 7	6,80
75 x 55	x 9	8,59
75 x 65	x 6	6,37
75 x 65	x 8	8,34
75 x 65	x 10	10,30
80 x 40	x 6	5,40
80 x 40	x 7	6,20
80 x 40	x 8	7,08
80 x 60	x 6	6,37
80 x 60	x 7	7,36
80 x 60	x 8	8,34
90 x 65	x 6	7,09
90 x 65	x 8	9,30
90 x 65	x 10	11,45
90 x 75	x 6,5	8,14
90 x 75	x 7	8,74
90 x 75	x 9	11,10
90 x 75	x 12,5	15,25

Size Thickness		
A	t	kg/m
100 x 50	x 6	6,85
100 x 50	x 8	8,99
100 x 50	x 10	11,10
100 x 50	x 12	13,10
100 x 65	x 6,5	8,17
100 x 65	x 7	8,77
100 x 65	x 8	9,94
100 x 65	x 9	11,10
100 x 65	x 10	12,30
100 x 65	x 11	13,40
100 x 75	x 6,5	8,17
100 x 75	x 7	9,30
100 x 75	x 8	10,60
100 x 75	x 9	11,80
100 x 75	x 10	13,00
100 x 75	x 11	14,30
100 x 75	x 12	15,40
120 x 80	x 8	12,20
120 x 80	x 10	15,00
120 x 80	x 12	17,80
120 x 80	x 14	20,50
125 x 75	x 6,5	9,98
125 x 75	x 8	12,20
125 x 75	x 10	15,00
125 x 75	x 12	17,80
130 x 65	x 8	11,80
130 x 65	x 10	14,60
130 x 65	x 12	17,30
137 x 105	x 6,4	11,70
137 x 105	x 7,9	14,50
137 x 105	x 9,5	17,30
150 x 75	x 9	15,30
150 x 75	x 10	17,00
150 x 75	x 11	18,60
150 x 75	x 12	20,20
150 x 75	x 13	21,70
150 x 75	x 15	24,80
150 x 90	x 9	16,70
150 x 90	x 10	18,20
150 x 90	x 12	21,60
150 x 90	x 15	26,60
150 x 90	x 18	31,70
150 x 100	x 10	19,00
150 x 100	x 12	22,60
150 x 100	x 14	26,10
150 x 100	x 15	27,80
160 x 80	x 10	18,20
160 x 80	x 12	21,60
160 x 80	x 14	25,00
200 x 100	x 10	23,00
200 x 100	x 12	27,30
200 x 100	x 14	31,60
200 x 100	x 15	33,70
200 x 100	x 16	35,90
200 x 150	x 12	32,00
200 x 150	x 15	39,60
200 x 150	x 18	47,10

M4, W 5-W 36 in accordance with ASTM A 6-83

Metric designation h x b x mass (nominal)		Imperial designation h x b x weight (nominal)		Dimensions b	a	e	
				mm	mm	mm	mm
M 100 x 100	x 19,3	M 4 x 4	x 13	102	100	6,5	9,4
	x 20,5		x 13,8	102	102	8,0	9,4
	x 24,2		x 16,3	107	100	7,9	12
W 130 x 130	x 23,8	W 5 x 5	x 16	127	127	6,1	9,1
	x 28,1		x 19	131	128	6,9	10,9
W 150 x 150	x 22,5	W 6 x 6	x 15	152	152	5,8	6,6
	x 29,8		x 20	157	153	6,6	9,3
	x 37,1		x 25	162	154	8,1	11,6
W 200 x 135	x 26,6	W 8 x 5,25	x 18	207	133	5,8	8,4
	x 31,3		x 21	210	134	6,4	10,2
W 200 x 165	x 35,9	W 8 x 6,5	x 24	201	165	6,2	10,2
	x 41,7		x 28	205	166	7,2	11,8
W 200 x 200	x 46,1	W 8 x 8	x 31	203	203	7,2	11
	x 52		x 35	206	204	7,9	12,6
	x 59		x 40	210	205	9,1	14,2
	x 71		x 48	216	206	10,2	17,4
	x 86		x 58	222	209	13	20,6
	x 100		x 67	229	210	14,5	23,7
W 250 x 145	x 32,7	W 10 x 5,75	x 22	258	146	6,1	9,1
	x 38,5		x 26	262	147	6,6	11,2
	x 44,8		x 30	266	148	7,6	13
W 250 x 200	x 49,1	W 10 x 8	x 33	247	202	7,4	11
	x 58		x 39	252	203	8	13,5
	x 67		x 45	257	204	8,9	15,7
W 250 X 250	x 73	W 10 x 10	x 49	253	254	8,6	14,2
	x 80		x 54	256	255	9,4	15,6
	x 89		x 60	260	256	10,7	17,3
	x 101		x 68	264	257	11,9	9,6
	x 115		x 77	269	259	13,5	22,1
	x 131		x 88	275	261	15,4	25,1
	x 149		x 100	282	263	17,3	28,4
	x 167		x 112	289	265	19,2	31,8
W 310 x 165	x 38,7	W 12 x 6,5	x 26	310	165	5,8	9,7
	x 44,5		x 30	313	166	6,6	11,2
	x 52		x 35	317	167	736	13,2
W 310 x 250	x 79	W 12 x 10	x 53	306	254	8,8	14,6
	x 86		x 58	310	254	9,1	16,3
W 310 x 310	x 97	W 12 x 12	x 65	308	305	8,9	15,4
	x 107		x 72	311	306	10,9	17,0
	x 117		x 79	314	307	1,9	18,7
	x 129		x 87	318	308	13,1	20,6
	x 143		x 96	353	309	14,0	22,9
	x 158		x 106	327	310	15,5	25,1
	x 179		x 120	333	313	18,0	28,1
	x 202		x 136	341	315	20,1	31,7
	x 226		x 152	348	317	22,1	35,6
	x 253		x 170	356	319	24,4	39,6
	x 283		x 190	365	322	26,9	44,1
	x 313		x 210	374	325	30,0	48,3
	x 342		x 230	382	328	32,6	52,6
	x 375		x 252	391	330	35,4	57,2
	x 415		x 279	403	334	38,9	62,7
	x 454		x 305	415	336	41,3	68,7
	x 500		x 336	427	340	45,1	751
W 360 x 170	x 44,8	W 14 x 6,75	x 30	352	171	6,9	9,8
	x 51		x 34	355	171	7,2	11,6
	x 57		x 38	358	172	7,9	13,1
W 360 x 250	x 91	W 14 x 10	x 61	353	254	9,5	16,4
	x 101		x 65	357	255	10,5	18,3
	x 110		x 74	360	256	11,4	19,9
	x 122		x 82	363	257	13,0	21,7

Metric designation h x b x mass (nominal)		Imperial designation h x b x weight (nominal)		Dimensions b	a	e	
				mm	mm	mm	mm
W 360 x 370	x 134	W 14 x 14,5	x 90	356	369	11,2	18,0
	x 147		x 99	360	370	12,3	19,8
	x 162		x 109	364	371	13,3	21,8
	x 179		x 120	368	373	15,0	23,9
	x 196		x 132	372	374	16,4	26,2
W 360 x 410	x 216	W 14 x 16	x 145	375	394	17,3	27,7
	x 237		x 159	380	395	18,9	30,2
	x 262		x 176	387	398	21,1	33,3
	x 287		x 193	393	399	22,3	36,6
	x 314		x 211	399	401	24,9	39,6
	x 347		x 233	407	404	27,2	43,7
	x 382		x 257	416	406	29,8	48,0
	x 421		x 283	425	409	32,8	52,6
	x 463		x 311	435	412	35,8	57,4
	x 509		x 342	446	416	39,1	62,7
	x 551		x 370	455	418	42,0	67,6
	x 592		x 398	465	421	45,0	72,3
	x 634		x 426	474	424	47,6	77,1
	x 677		x 455	483	428	51,2	81,5
	x 744		x 500	498	432	55,6	88,9
	x 818		x 550	514	437	60,5	97,0
	x 901		x 605	531	442	65,9	106,0
	x 990		x 665	550	448	71,9	115,0
	x 1086		x 730	569	454	78,0	125,0
W 410 x 180	x 53	W 16 x 7	x 36	403	177	7,5	10,9
	x 60		x 40	407	178	7,7	12,8
	x 67		x 45	410	179	8,8	14,4
	x 75		x 50	413	180	9,7	16,0
	x 85		x 57	417	181	10,9	18,2
W 410 x 260	x 100	W 16 x 10,25	x 67	415	260	10,0	16,9
	x 114		x 77	420	261	11,6	19,3
	x 132		x 89	425	263	13,3	22,2
	x 149		x 100	431	265	14,9	25,0
W 460 x 190	x 74	W 18 x 7,5	x 50	457	190	9,0	14,5
	x 82		x 55	460	191	9,9	16,0
	x 89		x 60	463	192	10,5	17,7
	x 97		x 65	466	193	11,4	19,0
	x 106		x 71	469	194	12,6	20,6
W 460 x 280	x 113	W 18 x 11	x 76	463	280	10,8	17,3
	x 128		x 86	467	282	12,2	19,6
	x 144		x 97	472	283	13,6	22,1
	x 158		x 106	476	284	15,0	23,9
	x 177		x 119	482	286	16,6	26,9
W 530 x 165	x 66	W 21 x 6,5	x 44	525	165	8,9	11,4
	x 74		x 50	529	166	9,7	13,6
	x 85		x 57	535	166	10,3	16,5
W 530 x 210	x 92	W 21 x 8,25	x 62	533	209	10,2	15,6
	x 101		x 68	537	210	10,9	17,4
	x 109		x 73	539	211	11,6	18,8
	x 123		x 83	544	515	13,1	21,2
	x 138		x 93	549	215	14,7	23,6
W 530 x 315	x 150	W 21 x 12,25	x 101	543	312	12,7	20,3
	x 165		x 111	546	313	14,0	222
	x 182		x 122	551	315	12,5	24,4
	x 196		x 132	554	316	16,5	26,3
	x 219		x 147	560	318	18,3	29,2
W 610 x 180	x 82	W24 x 7	x 55	599	178	10,0	12,8
	x 92		x 62	603	179	10,9	15,0
W 610 x 230	x 101	W 24 x 7	x 68	603	228	10,5	14,9
	x 113		x 76	608	228	11,2	17,3
	x 125		x 84	612	229	11,9	19,6
	x 140		x 94	617	230	13,1	22,2

M4, W 5-W 36 in accordance with ASTM A 6-83

Metric designation h x b x mass (nominal)		Imperial designation h x b x weight (nominal)		Dimensions b	a	e	
				mm	mm	mm	mm
W 610 x 325	x 155	W 24 x 12,75	x 104	611	324	12,7	19,0
	x 174		x 117	616	325	14,0	21,6
	x 195		x 131	622	327	15,4	24,4
	x 217		x 146	628	328	16,5	27,7
	x 241		x 162	635	329	17,9	31,0
W 690 x 250	x 125	W 27 x 10	x 84	678	253	11,7	16,3
	x 140		x 94	684	254	12,4	18,9
	x 152		x 102	688	254	13,1	21,1
	x 170		x 114	693	256	14,5	23,6
W 690 x 360	x 217	W 27 x 14	x 146	695	355	1534	24,8
	x 240		x 161	701	356	16,8	27,4
	x 265		x 178	706	358	18,4	30,2
W 760 x 265	x 147	W 30 x 10,5	x 99	725	265	13,2	17,0
	x 161		x 108	758	266	13,8	19,3
	x 172		x 116	762	267	14,4	21,6
	x 185		x 124	766	267	14,9	23,6
	x 196		x 132	770	268	15,6	25,4
W 760 x 380	x 257	W 30 x 15	x 173	773	381	16,6	27,1
	x 284		x 191	779	382	18,0	30,1
	x 314		x 211	786	384	19,7	33,4
W 840 x 295	x 176	W 33 x 11,5	x 118	835	292	14,0	18,8
	x 193		x 130	840	292	14,7	21,7
	x 210		x 141	846	293	15,4	24,4
	x 226		x 152	851	294	16,1	26,8
W 840 x 405	x 299	W 33 x 15,75	x 201	855	400	18,2	29,2
	x 329		x 221	862	40	19,7	32,4
	x 359		x 241	868	403	21,1	35,6

Metric designation h x b x mass (nominal)		Imperial designation h x b x weight (nominal)		Dimensions b	a	e	
				mm	mm	mm	mm
W 920 x 310	x 201	W 36 x 12	x 135	903	304	15,2	20,1
	x 223		x 150	911	304	15,9	23,9
	x 238		x 160	915	305	16,5	25,9
	x 253		x 170	919	306	17,3	27,9
	x 271		x 182	923	307	18,4	30,0
	x 289		x 194	927	308	19,4	32,0
	x 313		x 210	932	309	21,1	34,5
W 920 x 420	x 342	W 25 x 16,5	x 230	912	418	19,3	32,0
	x 365		x 245	916	419	20,3	34,3
	x 387		x 260	921	420	21,3	36,6
	x 417		x 280	927	422	22,5	39,9
	x 446		x 300	933	423	24,0	42,7
W 1000 x 300	x 222	W 40 x 12	x 149	970	300	16,0	21,0
	x 249		x 167	980	300	16,5	26,0
	x 272		x 783	990	300	16,5	31,0
	x 314		x 211	1000	300	19,0	36,0
	x 349		x 235	1008	302	21,0	40,0
W 1000 x 400	x 258	W 40 x 16	x 174	970	400	16,5	21,0
	x 296		x 199	982	400	16,5	27,0
	x 321		x 215	990	400	16,4	31,0
	x 371		x 249	1000	400	19,0	36,0
	x 412		x 277	1008	402	21,0	40,0
W 1000 x 450	x 286	W 40 x 18	x 192	970	450	18,0	21,0
	x 328		x 221	982	450	18,0	27,0
	x 363		x 244	992	450	18,0	32,0
	x 399		x 268	1000	451	19,0	36,0
	x 444		x 298	1008	453	21,0	40,0
	x 488		x 328	1016	455	23,0	44,0

European Small Channels / European Standard Channels

U 30-65 shapes in accordance with Euronorm 54-80 U

Section		kg/m	Dimensions h	b	a	e
			mm	mm	mm	mm
U	30 x 15	1,74	30	15	4,0	4,5
U	40 x 20	2,87	40	20	5,0	5,5
U	40 x 35	4,87	40	35	5,0	7,0
U	40 x 25	3,86	50	25	5,0	6,0
U	50 x 38	5,59	50	38	5,0	7,0
U	60 x 30	5,07	60	30	6,0	6,0
U	65 x 42	7,09	65	42	5,5	7,5
U	70 x 40	6,77	70	40	6,0	6,5

European Standard Channels UPN

Section		kg/m	Dimensions h	b	a	e
			mm	mm	mm	mm
UPN	80	8,64	80	45	6,0	8,0
UPN	100	10,60	100	50	6,0	8,5
UPN	120	13,40	120	55	7,0	9,0
UPN	140	16,00	140	60	7,0	10,0
UPN	160	18,80	160	65	7,5	10,5
UPN	180	22,00	180	70	8,0	11,0
UPN	200	25,30	200	75	8,5	11,5
UPN	220	29,40	220	80	9,0	12,5
UPN	240	33,20	240	85	9,2	13,0
UPN	260	37,90	260	90	10,0	14,0
UPN	280	41,80	280	95	10,0	15,0
UPN	300	46,20	300	100	10,0	16,0
UPN	320	59,50	320	100	14,0	17,5
UPN	350	60,60	350	100	14,0	16,0
UPN	380	63,10	380	102	13,5	16,0
UPN	400	71,80	400	110	14,0	18,0

Designation	Depth in	Width in	Thickness Web in	Thickness Flange in	Weight lb/ft
C 15 x 50	15	3.716	0.716	0.650	50
C 15 x 40	15	3.520	0.520	0.650	40
C 15 x 33.9	15	3.400	0.400	0.650	33.9
C 12 x 30	12	3.170	0.510	0.501	30
C 12 x 25	12	3.047	0.387	0.501	25
C 12 x 20.7	12	2.942	0.282	0.501	20.7
C 10 x 30	10	3.033	0.673	0.436	30
C 10 x 25	10	2.886	0.526	0.436	25
C 10 x 20	10	2.739	0.379	0.436	20
C 10 x 15.3	10	2.600	0.240	0.436	15.3
C 9 x 20	9	2.648	0.448	0.413	20
C 9 x 15	9	2.485	0.285	0.413	15
C 9 x 13.4	9	2.433	0.233	0.413	13.4
C 8 x 18.75	8	2.527	0.487	0.390	18.75
C 8 x 13.75	8	2.343	0.303	0.390	13.75
C 8 x 11.5	8	2.260	0.220	0.390	11.5
C 7 x 14.75	7	2.299	0.419	0.366	14.75
C 7 x 12.25	7	2.194	0.314	0.366	12.25
C 7 x 9.8	7	2.090	0.210	0.366	9.8
C 6 x 13	6	2.157	0.437	0.343	13
C 6 x 10.5	6	2.034	0.314	0.343	10.5
C 6 x 8.2	6	1.920	0.200	0.343	8.2
C 5 x 9	5	1.885	0.325	0.320	9
C 5 x 6.7	5	1.750	0.190	0.320	6.7
C 4 x 7.25	4	1.721	0.321	0.296	7.25
C 4 x 5.4	4	1.584	0.184	0.296	5.4
C 3 x 6	3	1.596	0.356	0.273	6
C 3 x 5	3	1.498	0.258	0.273	5
C 3 x 4.1	3	1.410	0.170	0.273	4.1

MC Channels

Depth in Inches Wt./Ft./Lbs. (A)	Web Thick. in Inches (B)	Flange Width in Inches (C)
MC 3 x 7.1	.312	1.938
MC 4 x 13.8	.500	2.500
MC 6 x 12.0	.310	2.497
15.1	.316	2.941
15.3	.340	3.500
16.3	.375	3.000
18.0	.379	3.504
MC 7 x 19.1	.352	3.452
22.7	.503	3.603
MC 8 x 18.7	.353	2.978
20.0	.400	3.025
21.4	.375	3.450
22.8	.427	3.502
MC 9 x 23.9	.400	3.450
25.4	.450	3.500
–	–	–

Depth in Inches Wt./Ft./Lbs. (A)	Web Thick. in Inches (B)	Flange Width in Inches (C)
MC 10 x 22.0	.312	3.315
25.0	.380	3.405
28.5	.425	3.950
33.6	.575	4.100
41.1	.796	4.321
MC 12 x 31.0	.370	3.670
35.0	.467	3.767
40.0	.590	3.890
45.0	.712	4.012
50.0	.835	4.135
MC 13 x 31.8	.375	4.000
50.0	.787	4.412
MC 18 x 42.7	.450	3.950
45.8	.500	4.000
51.9	.600	4.100
58.0	.700	4.200

Calculation Lbs/Ft into Kg/Mtr = x 1,4895

Designation	Depth mm	Width mm	Thickness Web mm	Thickness Flange mm	Weight kg/m
PFC 100 x 50 x 10	100	50	5	8.5	10.2
PFC 125 x 65 x 15	125	65	5.5	9.5	14.8
PFC 150 x 75 x 18	150	75	5.5	10	17.9
PFC 150 x 90 x 24	150	90	6.5	12	23.9
PFC 180 x 75 x 20	180	75	6	10.5	20.3
PFC 180 x 90 x 26	180	90	6.5	12.5	26.1
PFC 200 x 75 x 23	200	75	6	12.5	23.4
PFC 200 x 90 x 30	200	90	7	14	29.7
PFC 230 x 75 x 26	230	75	6.5	12.5	25.7
PFC 230 x 90 x 32	230	90	7.5	14	32.2
PFC 260 x 75 x 28	260	75	7	12	27.6
PFC 260 x 90 x 35	260	90	8	14	34.8
PFC 300 x 90 x 41	300	90	9	15.5	41.4
PFC 300 x 100 x 46	300	100	9	16.5	45.5
PFC 380 x 100 x 54	380	100	9.5	17.5	54
PFC 430 x 100 x 64	430	100	11	19	64.6

Channels BS 4 Part 1

Designation	Depth mm	Width mm	Thickness Web mm	Thickness Flange mm	Weight kg/m
432 x 102 x 65	431.8	101.6	12.2	16.8	65.5
381 x 102 x 55	381	101.6	10.4	16.3	55.0
305 x 102 x 46	304.8	101.6	10.2	14.8	46.2
305 x 89 x 42	304.8	88.9	10.2	13.7	41.8
254 x 89 x 36	254	88.9	9.1	13.6	35.7
254 x 76 x 28	254	76.2	8.1	10.9	28.2
229 x 89 x 33	228.6	88.9	8.6	13.3	32.7
229 x 76 x 26	228.6	76.2	7.6	11.2	26.1
203 x 89 x 30	203.2	88.9	8.1	12.9	29.8
203 x 76 x 24	203.2	76.2	7.1	11.2	23.9
178 x 89 x 27	177.8	88.9	7.6	12.3	26.8
178 x 76 x 21	177.8	76.2	6.6	10.3	20.8
152 x 89 x 24	152.4	88.9	7.1	11.6	23.9
152 x 76 x 18	152.4	76.2	6.4	9	17.9
127 x 64 x 15	127	63.5	6.4	9.2	14.9
102 x 51 x 10	101.6	50.8	6.1	7.6	10.4
76 x 38 x 7	76.2	38.1	5.1	6.8	6.7

Nominal Diameter D mm	Nominal Weight kg/m	Nominal Diameter D mm	Nominal Weight kg/m
6	0,22	22	2,98
8	0,40	24	3,55
		25	3,85
10	0,62	26	4,17
12	0,89	28	4,83
14	1,21		
16	1,58	30	5,55
18	2,00	32	6,31
19	2,23	36	7,99
20	2,47	40	9,87

Comparison Specifications

Country	Specification	Grade	Yield Strength	Tensile Strength	Elongation	
Britain	BS 4449	Mild Steel	250 N/ mm	Actual Yield Strees x 1,15	22	
		High Yield	460 N/ mm	Actual Yield Stress x 1,15	12	
U.S.A	ASTM A 615		40000 psi	70000 psi	No. 3,7 No.4,5,6	> 11 > 12
		Grade 40	(300 MPa) (28,12 kg f/ mm)	(500 MPa) (49,2 kg f/ mm)		
		Grade 60	60000 psi (400 MPa) (42,18 kg f/ mm	90000 psi (500 MPa) (63,29 kg f/ mm)	No. 3,4,5,6 No. 7,8 No. 9,10,11,14,18,7	9 8
Germany	DIN 488	IR BSt 22/ 34 RU	2200 KP/ cm (220 N/ mm) (22,45 kg f/ mm)	3400 KP/ cm (340 N/ mm) (34,69 kg f/ mm)	18	
		IIIU BSt 42/ 52 RU	(4200 KP/ cm) (420 N/ mm) (42,86 kg f/ mm)	(5000 KP/ cm) (500 N/ mm) (51,02 kg f/ mm)	10	
Japan	Jis G3112	SD 24	24 kg f/ mm 235 N/ mm	39-53 kg f/ mm 382-520 N/ mm	< D22 > D25	13 22
		SD 30	30 kg f/ mm 294 N/ mm	49-63 kg f/ mm 480-618 N/ mm	< D22 > D25	14 18
		SD 35	35 kg f/ mm 343 N/ mm	50 kg f/ mm 490 N/ mm	< D22 > D25	18 20
		SD 40	40 kg f/ mm 392 N/ mm	57 kg f/ mm 550 N/ mm	< D22 > D25	16 19
		SD 50	50 kg f/ mm 490 N/ mm	63 kg f/ mm 618 N/ mm	< D22 > D25	12 14
France	NFA 35015 35016	FeE 22 FeE 24 FeE 40 FeE 50	215 N/ mm 235 N/ mm 400 N/ mm 500 N/ mm	330-490 N/ mm 410-490 N/ mm 480 N/ mm 550 N/ mm		22 25 14 12

DIA mm Ø	Weight kg/m	DIA mm Ø	Weight kg/m	DIA mm Ø	Weight kg/m	DIA mm Ø	Weight kg/m
20	2,5	75	32,0	140	112,0	250	356,0
25	3,6	80	36,5	150	128,0	260	385,0
30	5,0	85	41,0	160	146,0	270	415,0
35	7,0	90	46,0	170	165,0	280	447,0
40	9,0	95	52,0	180	184,0	300	513,0
45	11,5	100	57,0	190	206,0	310	563,0
50	14,5	105	63,0	200	228,0	320	599,0
55	17,0	110	69,0	210	251,0	350	698,0
60	20,5	115	76,0	220	276,0	370	780,0
65	24,0	120	82,0	230	301,0	380	844,0
70	28,0	130	96,5	240	328,0	400	911,0

Bushings GG 25- el. continuous casting/hydraulic systems

Size mm Ø OD x ID	Weight kg/m	Size mm Ø OD x ID	Weight kg/m	Size mm Ø OD x ID	Weight kg/m	Size mm Ø OD x ID	Weight kg/m
40 x 20	3,5	100 x70	29,0	150 x 70	101,0	190 x 80	174,0
45 x 20	5,0	110 x 60	48,0	150 x 80	92,0	190 x 100	150,0
50 x 20	6,0	110 x 70	41,0	150 x 90	82,0	190 x 130	110,0
60 x 30	15,5	110 x 80	32,5	150 x 105	65,0	200 x 145	109,0
70 x 30	23,0	120 x 50	68,0	160 x 80	110,0	210 x 100	195,0
70 x 40	19,0	120 x 60	62,0	160 x 90	100,0	210 x 120	170,0
70 x 45	16,6	120 x 70	55,0	160 x 100	89,0	210 x 160	106,0
80 x 30	31,0	120 x 80	46,0	160 x 110	77,0	220 x 120	195,0
80 x 40	27,0	130 x 60	76,0	160 x 120	64,0	225 x 175	115,0
90 x 40	37,0	130 x 80	60,0	170 x 80	128,0	250 x 120	275,0
90 x 45	34,8	130 x 90	51,0	170 x 100	108,0	250 x 200	128,0
90 x 50	32,0	130 x 100	39,0	170 x 130	69,0	260 x 180	206,0
100 x 40	49,0	140 x 70	84,0	180 x 90	139,0	280 x 210	195,0
100 x 50	43,0	140 x 70	66,0	180 x 130	89,0	320 x 250	243,0
100 x 60	36,5	140 x 100	55,0	180 x 140	73,0		

Square bars - el. continuous casting/hydraulic systems

Size mm Ø	Weight kg/m	Size mm Ø	Weight kg/m	Size mm Ø	Weight kg/m	Size mm Ø	Weight kg/m
30 x 30	6,7	70 x 70	36,6	100 x 100	74,7	140 x 140	142,0
40 x 40	11,9	80 x 80	47,8	110 x 110	90,3	150 x 150	163,0
45 x 45	15,1	85 x 85	54,0	120 x 120	107,5	160 x 160	186,0
50 x 50	18,7	90 x 90	60,5	130 x 130	123,0	200 x 200	290,0
60 x 60	26,9						

Nominal Dimensions (inches) and weights

Size (IPS)	Outside Diameter	Regular				Extra Strong			
		Inside Diameter	Wall Thickness	Lbs. per Foot		Inside Diameter	Wall Thickness	Lbs. per Foot	
				Brass	Copper			Brass	Copper
1/8	.405	.281	.062	.253	.259	.205	.100	.363	.371
1/4	.540	.376	.082	.447	.457	.294	.123	.611	.625
3/8	.675	.495	.090	.627	.641	.421	.127	.829	.847
1/2	.840	.626	.107	.934	.955	.542	.149	1.23	1.25
3/4	1.050	.822	.114	1.27	1.30	.736	.157	1.67	1.71
1	1.315	1.063	.126	1.78	1.82	.951	.182	2.-16	2.51
1 1/4	1.660	1.368	.146	2.63	2.69	1.272	.194	3.39	3.46
1 1/2	1.900	1.600	.150	3.13	3.20	1.494	.203	1.10	4.19
2	2.375	2.063	.156	4.12	4.22	1.933	.221	5.67	5.80
2 1/2	2.875	2.501	.187	5.99	6.12	2.315	.280	8.66	8.85
3	3.500	3.062	.219	8.56	8.76	2.892	.304	11.6	11.8
3 1/2	4.000	3.500	.250	11.2	11.4	3.358	.321	1 2.1	14.4
4	4.500	4.000	.250	12.7	12.9	3.818	.341	16.9	17.3
5	5.562	5.062	.250	15.8	16.2	4.812	.375	23.2	23.7
6	6.625	6.125	.250	19.0	19.4	5.751	.437	32.2	32.9
8	8.625	8.001	.312	30.9	31.6	7.625	.500	48.4	49.5
10	10.750	10.020	.365	45.2	46.2	9.750	.500	61.1	62.4
12	12.750	12.000	.375	55.3	65.5	...	...	...	...

Above pipe suitable for use in plumbing lines, boiler feed lines, and similar applications. Data in table abstracted from ASTM B 42 and B 43.

Copper Pipe
ASTM- Seamless Copper Water Tube
Dimensions and Weights

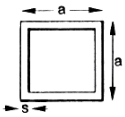
Standard size of tube	Nominal outside diameter of tube	Type K Tube		Type L Tube		Type M Tube	
		Wall thickness	Weight per foot	Wall thickness	Weight per foot	Wall thickness	Weight per foot
Inches	Inches	Inches	Pounds	Inches	Pounds	Inches	Pounds
1/8	.375	.035	.145	.030	.126	.025	.106
2/8	.500	.049	.269	.035	.198	.025	.145
1/2	.625	.049	.344	.040	.285	.028	.204
5/8	.750	.049	.418	.042	.362	.030	.263
3/4	.875	.065	.641	.045	.455	.032	.328
1	1.125	.065	.839	.050	.655	.035	.465
1 1/4	1.375	.065	1.04	.055	.884	.042	.682
1 1/2	1.625	.072	1.36	.060	1.14	.049	.940
2	2.125	.083	2.06	.070	1.75	.058	1.46
2 1/2	2.625	.095	2.93	.080	2.48	.065	2.03
3	3.125	.109	4.00	.090	3.33	.072	2.68
3 1/2	3.625	.120	5.12	.100	4.29	.083	3.58
4	4.125	.134	6.51	.110	5.38	.095	4.66
5	5.125	.160	9.67	.125	7.61	.109	6.66
6	6.125	.192	13.9	.140	10.2	.122	8.92
8	8.125	.271	25.9	.200	19.3	.170	16.5
10	10.125	.338	40.3	.250	30.1	.212	25.6
12	12.125	.405	57.8	.280	40.4	.254	36.7

Copper water tubes are designed for plumbing systems, underground water services, etc. The tubing is generally used with solder, flared, or compression type fittings. Data in table (abstracted from ASTM B88) covers three wall thicknesses designated Types K, L, and M. Types K and L are furnished in coils or straight lengths. Coiled lengths are annealed after coiling. Straight lengths are furnished in the drawn temper unless annealing is specified. Type M is furnished in straight lengths and in drawn temper only.

d	s	KG/MTR
10	1	0.252
10	1.5	0.356
10	2	0.447
10	2.5	0.524
11	1	0.279
12	1	0.307
12	1.5	0.440
12	2	0.559
12	3	0.755
13	1.5	0.482
13	3	0.838
14	2	0.671
14	3	0.922
15	1	0.391
15	1.5	0.566
15	2	0.727
15	2.5	0.873
16	1.5	0.608
16	2	0.782
16	3	1.090
16	4	1.341
18	1	0.475
18	1.5	0.692
18	2	0.894
20	1	0.531
20	1.5	0.776
20	2	1.006
20	2.5	1.223
20	5	2.096
22	1	0.587
22	1.5	0.859
22	2	1.118
22	3	1.593
23	1.5	0.901
23	2	1.174
24	2	1.230
24	3	1.761
25	2	1.286
25	2.5	1.572
25	5	2.795
25	7.5	3.668
26	1.5	1.027
26	2	1.341
26	3	1.928
28	1	0.755
28	1.5	1.111
28	2	1.453
28	4	2.683
30	2	1.565
30	2.5	1.921

d	s	KG/MTR
30	3	2.264
30	5	3.493
32	1	0.866
32	2	1.677
33	1.5	1.320
33	4	3.242
34	2	1.789
35	1	0.950
35	1.5	1.404
35	2	1.844
35	2.5	2.271
35	5	4.192
35	75	5.764
36	2	1.900
36	3	2.767
38	1.5	1.530
38	2	2.012
40	1.5	1.614
40	2.5	2.620
40	3	3.104
40	5	4.891
40	10	8.384
42	2	2.236
42	3	3.270
44	2	2.347
44.5	2	2.375
45	5	5.589
45	10	9.781
46	2	2.459
48	1.5	1.949
50	2	2.683
50	3	3.940
50	4	5.142
50	5	6.288
52	1	1.425
52	1.5	2.117
53	1.5	2.159
54	2	2.906
55	5	6.987
55	10	12.576
56	3	4.443
57	3	4.527
57	3.5	_ 5.233
58	3	4.611
60	2.5	4.017
60	5	7.685
60	10	13.973
60	15	18.864
63	3	5.030
64	2	3.465
65	5	8.384
70	2.5	4.716
70	5	9.082
70	10	16.768
74	2	4.024
75	2.5	5.065
76	3	6.120

d	s	KG/MTR
80	2	4.360
80	5	10.480
80	10	19.562
84	2	4.583
85	2.5	5.764
86	3	6.959
89	2.5	6.046
89	3	7.210
90	5	11.877
90	10	22.357
95	2.5	6.463
100	2.5	6.812
100	5	13.274
100	10	25.151
100	20	44.714
102	1.5	4.213
104	2	5.701
105	2.5	7.161
108	2.5	7.375
108	3	8.803
108	4	11.626
110	5	14.672
120	5	16.069
120	10	30.741
130	5	17.466
131	3	10.731
132	3.5	12.569
133	3.5	12.667
133	4	14.420
135	5	18.165
140	10	36.330
150	5	20.261
150	10	39.124
156	3	12.827
158	5	21.379
159	3	13.079
159	6	25.654
160	5	21.658
160	10	41.919
170	5	23.055
170	10	44.714
180	5	24.453
180	10	47.508
191	4	20.904
200	5	27.247
200	10	53.097
206	3	17.019
210	5	28.645
220	10	58.687
256	3	21.211
264	5	36.190
267	3	22.133
300	5	41.220

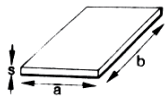


a	a	s	KG/sqm
4	4	0.5	0.062
4	4	1	0.107
5	5	0.5	0.080
5	5	1	0.142
6	4	1	0.142
8	5	1	0.196
8	6	1	0.214
8	8	1	0.249
8	8	1.5	0.347
10	5	1	0.231
10	6	1	0.249
10	8	1	0.285
10	10	1	0.320
10	10	2	0.570
12	6	1	0.285
12	6	1.5	0.401
12	8	1	0.320
12	10	2	0.641
12	12	1	0.392
15	10	1	0.409
16	14	2	0.926
17.5	17.5	3	0.000
18	18	1	0.605
20	10	1	0.498
20	12	1	0.534
20	12	1.5	0.774
20	14	2	1.068
20	20	1.5	0.9BB
22	12	2	1.068
26	17	3	4.278
28	14	3	5.480
30	10	1.5	0.988
35	10	3	2.083
40	30	4	4.414
60	35	2	3.240

d	KG/MTR
2.5	0.044
3	0.063
4	0.112
5	0.175
6	0.252
7	0.342
7.5	0.393
8	0.447
9	0.566
10	0.699
11	0.845
12	1.006
14	1.369
15	1.572
16	1.789
18	2.264
20	2.795
24	4.024
25	4.367
26	4.723
28	5.477

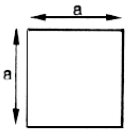
d	KG/MTR
29	5.876
30	6.288
33	7.608
35	8.558
36	9.055
40	11.178
45	14.148
50	17.466
60	25.151
65	29.518
70	34.234
80	44.714
90	56.591
100	69.865
110	84.537
116	94.010
120	100.606
127	112.685
130	118.072
150	157.196
160	178.923
170	201.987
180	226.363
200	279.460
300	628.785
318	706.503
410	1174.431
500	1746.625

Copper Plates



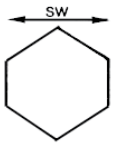
s	a	b	KG/sqm
0.3	600	2000	2.670
0.4	1000	2000	3.560
0.5	1000	1100	4.450
0.5	1000	2000	4.450
0.6	1000	2000	5.340
0.7	1000	2000	6.230
0.8	1000	2000	7.120
0.8	1250	2500	7.120
1	1000	2000	8.900
1	1250	2500	8.900
1.2	1000	2000	10.680
1.5	1000	2000	13.350
1.5	1250	2500	13.350
1.5	1500	3000	13.350
2	1000	2000	17.800
2	1250	2500	17.800
2	1500	3000	17.800
2.5	1000	2000	22.250
2.5	1250	2500	22.250
2.5	1500	3000	22.250
3	1000	2000	26.700
3	1250	2500	26.700
4	1000	2000	35.600
4	1250	2500	35.600
4.5	1000	2000	40.050
5	1000	2000	44.500
6	1000	2000	53.400
6	1250	2500	53.400
6	1500	3000	53.400
8	1020	2020	71.200
10	1020	2020	89.000
12	1020	2020	106.800
15	500	Z000	133.500
15	1020	3000	133.500
20	1020	2020	178.000
20	1040	2050	178.000
25	1020	2020	222.500
30	1020	2020	267.000
40	1020	2020	356.000
50	1020	3020	445.000
60	970	3120	534.000
60	1020	2020	534.00
80	940	2390	712.000
100	600	2100	890.000
100	1020	2020	890.000
120	600	2000	1068.000

Copper Square Bars



a	a	KG/MTR
5	5	0.223
6	6	0.320
8	8	0.570
10	10	0.890
12	12	1.282
14	14	1.744
15	15	2.003
18	18	2.884
20	20	3.560
22	22	4.308
25	25	5.563
30	30	8.010
35	35	10.903
40	40	14.240
50	50	22.250
60	60	32.040
80	80	56.960
90	90	72.090
100	100	89.000

Copper Hexagon Bars



Sw		KG/MTR
14		1.510
15		1.734
19		2.782
36		9.988

d	S	KG/MTR
2	0.5	0.020
3	1	0.053
3.5	1	0.066
4	0.5	0.046
4	1	0.079
5	0.5	0.059
5	0.75	0.084
5	1	0.106
5	1.5	0.138
6	0.5	0.073
6	1	0.132
6	1.5	0.178
7	0.5	0.086
7	1	0.158
7	1.5	0.218
8	0.5	0.099
8	1	0.185
8	1.5	0.257
8	2	0.317
9	1	0.211
9	1.5	0.297
10	0.5	0.125
10	1	0.237
10	1.5	0.336
10	2	0.422
10	2.5	0.495
10	3	0.554
10	3.5	0.600
11	0.35	0.098
12	1	0.290
12	1.5	0.415
12	2	0.528
12	3	0.712
13	1	0.317
13	1.5	0.455
14	1	0.343
14	1.5	0.495
14	2	0.633
14	3	0.870
15	1	0.369
15	1.5	0.534
15	2	0.686
15	2.5	0.824
16	1	0.396
16	1.5	0.574
16	2	0.739
16	3	1.029
16.5	1.75	0.681
17	1	0.422
17	2.5	0.956
18	1	0.448
18	1.5	0.653
18	4	1.477
18	5	1.714
20	1	0.501
20	1.5	0.732
20	2	0.950
20	3	1.345
20	4	1.688
20	5	1.978

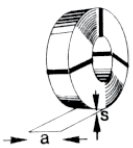
d	S	KG/MTR
20	6	2.216
22	1	0.554
22	3	1.503
22	4	1.899
22	5	2.242
23	1.5	0.851
24	2.5	1.418
24	3	1.662
25	1	0.633
25	1.5	0.930
25	2	1.213
25	2.5	1.484
25	5	2.638
26	2	1.266
28	1	0.712
28	1.5	1.048
28	2	1.372
30	1	0.765
30	1.5	1.128
30	2	1.477
30	2.5	1.813
30	3	2.136
30	5	3.297
31	2	1.530
31	2.5	1.879
31	5	3.429
32	1	0.818
32	2	1.583
32	3	2.295
33	1	0.844
33	1.5	1.246
33	2	1.635
34	2.5	2.077
34	3.5	2.816
34	5.5	4.134
34	7	4.985
35	1.5	1.325
35	7.5	5.440
36	1	0.923
37	3.5	3.093
38	1	0.976
39	3	2.849
39	4	3.693
39	4.5	4.095
40	1	1.029
40	1.5	1.523
40	2	2.005
40	2.5	2.473
40	3	0.000
40	5	4.616
42	1.5	1.602
42	2	2.110
43	1.5	1.642
43	2	2.163
43	3	3.165
43	3.5	3.690
44	1.5	1.681
44	2	2.216
44	3	3.244
45	1.5	1.721

d	S	KG/MTR
45	3	3.323
45	4.5	4.807
45	5	5.275
47	7	7.385
48	0.5	0.626
48	1.5	1.840
48	8	8.440
49	1.5	1.879
50	1.5	1.919
50	2	2.532
50	2.5	3.132
50	5	5.935
50	10	10.550
50	15	13.847
52	1	1.345
52	2	2.638
52	5	6.198
52	6.5	7.801
53	5	6.330
54	3	4.036
54	4	5.275
55	2.5	3.462
55	5	6.594
56	10	12.133
57	3	4.275
57	5	6.858
58	3.5	5.031
58	4	5.697
58	5	6.990
58	6	8.229
58	8	10.550
58	10	12.660
60	2.5	3.792
60	15	17.804
63	3	4.748
64	12	16.459
65	3	4.906
65	10	14.860
66	1.5	2.552
66	6	9.495
66	8	12.238
68	2.5	4.319
68	14	19.940
70	1.5	2.710
70	2.5	4.451
70	15	21.760
72	1.5	2.789
72	3.5	6.324
73	1.5	2.829
75	2.5	4.781
75	10	17.144
76	6	11.078
77	2	3.956
78	6	11.394
80	3.5	7.062
80	5	9.891
80	10	18.463
80	20	31.651
81	6.5	12.773
82	1.5	3.185

Brass Tube

d	S	KG/MTR
84	2	4.326
84	8.5	16.927
85	2.5	5.440
85	6	12.502
85	7	14.401
87	9.5	19.419
90	4	9.073
90	5	11.210
90	10	21.101
92	5	11.474
95	3	7.280
95	8.5	19.393
96	9	20.652
97	10.5	23.956
100	2.5	6.432
100	4	10.128
100	5	12.529
100	10	23.738
100	15	33.629
100	20	42.202
101	12	28.170
104	14.5	34.229
105	2.35	6.363
105	5	13.188
106	6	15.826
108	4	11.103
110	4	11.183
110	5	13.847
112	12	30.521
116	6	17.408
125	2.5	8.078
126	3	9.733
130	5	16.485
130	7.5	24.233
140	10	34.289
155	7.5	29.178
155.6	7.95	30.961
156	3	12.107
160	10	39.564
180	20	84.403
185	5	24.021
200	5	25.717
200	10	50.711
210	5	27.357

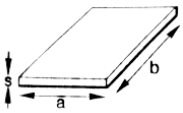
Brass Strip MS 63



s	a	KG/MTR
0.05	100	0.042
0.1	43	0.000
0.1	65	0.000
0.1	300	0.252
0.2	30	0.050
0.2	152	0.255
0.3	50	0.126
0.4	38	0.000
0.4	50	0.168
0.4	140	0.470
0.5	15	0.063
0.5	18	0.076

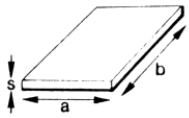
0.5	28	0.118
0.6	60	0.302
0.8	10	0.067
0.8	20	0.134
0.8	116	0.780
1	6	0.050
1	8	0.067
1	12	0.101
1	25	0.210
1	50	0.420
1	60	0.504
1	100	0.840
1.5	20	0.252
1.5	28	0.353
2	18	0.302
2	46	0.773
2	53	0.890
2.5	20	0.420
2.5	50	1.050
2.5	57	1.197

Brass Sheets



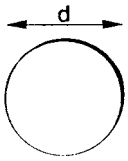
s	a	b	KG/sq m
0.2	600	2000	1.680
0.3	600	2000	2.520
0.4	600	2000	3.360
0.5	540	2000	4.200
0.5	600	2000	4.200
0.5	1000	2000	4.200
0.6	600	2000	5.040
0.6	1000	2000	5.040
0.7	350	1220	5.880
0.7	480	2000	5.880
0.7	600	2000	5.880
0.7	1000	2000	5.880
0.75	1000	2000	6.300
0.B	600	2000	6.720
1	600	2000	8.400
1	1000	2000	8.400
1	1250	2500	8.400
1.5	600	2000	12.600
1.5	1000	2000	12.600
2	600	2000	16.800
2	1000	2000	16.800
2	1250	2500	16.800
2.25	600	2000	18.900
2.5	600	2000	21.000
2.5	1000	2000	21.000
3	600	2000	25.200
3	1000	2000	25.200
3	1250	2500	25.200
4	600	2000	33.600
4	1000	2000	33.600
5	600	2000	42.000
5	1000	2000	42.000
6	600	2000	50.400
6	1000	2000	50.400
8	600	2000	67.200
8	1000	2000	67.200
10	1000	2000	84.000
12	1020	2020	100.800
13	1180	2470	109.200
14	600	2000	117.600
14	1000	2000	117.600
15	1020	2020	126.000
20	1020	2020	168.000
25	1020	2020	210.000
30	1020	2020	252.000
35	1020	2020	294.000
40	1020	2020	336.000
45	1020	2020	378.000
50	1020	2020	420.000
60	1020	2020	504.000
65	1500	3000	546.000
80	1020	2020	672.000
100	600	2000	840.000
120	600	2000	1008.000
140	600	2000	1176.000

Brass Foil



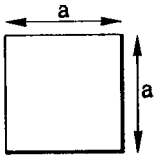
s	a	b	KG/MTR
0.01	300	650	0.084
0.02	300	650	0.168
0.03	300	650	0.252
0.04	300	650	0.336
0.05	300	650	0.082
0.06	300	650	0.504
0.08	300	650	0.672

Brass Round Bar



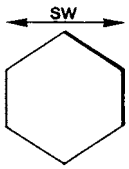
	KG/MTR
2	0.026
2.5	0.042
3	0.061
3.5	0.081
4	0.106
5	0.165
5.5	0.199
6	0.237
6.5	0.279
7	0.323
8	0.422
8.5	0.476
9	0.534
10	0.636
11	0.798
12	0.916
13	1.114
13.5	1.202
14	1.308
14.5	1.386
15	1.501
16	1.708
17	1.952
18	2.162
19.5	2.507
20	2.669
21	2.908
22	3.229
23	3.573
24	3.843
25	3.974
26	4.458
28	5.170
29	5.546
30	6.005
31	6.337
32	6.752
34	7.623
35	7.789
36	8.546
37	9.027
38	9.522
40	10.550
42	11.632
44	12.766
45	12.876
48	15.193
50	16.485
52	17.830
55	20.430
60	23.456
65	27.860
70	32.311
75	37.091
80	42.202
85	47.642
90	53.411
100	65.940
105	73.564
110	79.787
120	94.954
130	107.459
140	129.242
150	148.365
160	170.816
180	216.189
190	238.043
200	263.760
225	333.821
230	352.975
240	379.814
250	417.031
280	516.970
300	600.525
330	718.087
350	807.765

Brass Square Bar

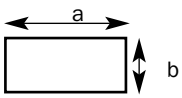


a	a	KG/MTR
4	4	0.134
5	5	0.210
6	6	0.302
7	7	0.412
8	8	0.538
9	9	0.680
10	10	0.840
12	12	1.210
15	15	1.890
17	17	2.428
18	18	2.722
20	20	3.360
22	22	4.066
25	25	5.250
30	30	7.560
35	35	10.290
40	40	13.440
45	45	17.010
46	46	17.774
50	50	21.000
55	55	25.410
60	60	30.240
65	65	35.490
70	70	41.160
75	75	47.813
80	80	53.760
90	90	68.040
100	100	84.000
120	120	122.400
130	130	141.960

Brass Hexagon Bar



Sw	KG/MTR
4	0.116
5	0.182
6	0.262
7	0.356
8	0.466
9	0.589
10	0.727
11	0.880
12	1.047
13	1.229
14	1.443
15	1.637
16	1.862
17	2.102
18	2.357
19	2.626
21	3.208
22	3.520
24	4.190
27	5.302
30	6.546
32	7.448
36	9.427
38	10.503
41	12.227
42	12.831
46	15.391
47	16.067
60	26.185
70	35.640
80	47.105
85	53.177
90	58.916



a	b	KG/MTR
5	6	0.126
6	2	0.101
6	4	0.202
6	5	0.252
7	2,5	0.147
8	2	0.134
8	3	0.202
8	4	0.269
8	5	0.336
10	2	0.168
10	3	0.252
10	4	0.336
10	5	0.420
10	6	0.504
10	8	0.672
12	2	0.204
12	3	0.302
12	4	0.403
12	5	0.504
12	6	0.612
12	8	0.806
14	4	0.470
15	2	0.252
15	3	0.378
15	4	0.504
15	5	0.638
15	6	0.756
15	8	1.020
15	10	1.260
16	8	1.075
20	2	0.336
20	3	0.504
20	4	0.672
20	5	0.840
20	6	1.020
20	8	1.360
20	10	1.680
20	12	2.016
20	15	2.520
22	4	2.739
25	3	0.630
25	4	0.840
25	5	1.063
25	6	1.260
25	8	1.680
25	10	2.100
25	15	3.150
25	20	4.250
30	2	0.504
30	3	0.756
30	4	1.008
30	5	1.260
30	6	1.512
30	8	1.992
30	10	2.520
30	12	3.024
30	15	3.825
30	20	5.040
35	2	0.588
35	3	0.882
35	4	1.190
35	5	1.488
35	6	1.764
35	8	2.352
35	10	2.940
35	12	3.528
35	15	4.463
35	20	5.880
40	1,5	0.504
40	3	1.020
40	3,5	1.176
40	4	1.360

a	b	KG/MTR
40	4,5	1.512
40	5	1.680
40	6	2.016
40	8	2.688
40	10	3.360
40	15	5.040
40	20	6.880
40	25	8.400
40	30	10.080
45	5	1.890
45	8	3.024
45	10	3.780
50	3	1.260
50	4	1.700
50	5	2.100
50	6	2.520
50	10	4.250
50	12	5.100
50	13	5.460
50	15	6.375
50	20	8.500
50	25	10.500
50	30	12.750
55	15	6.930
60	4	2.016
60	5	2.550
60	6	3.024
60	8	4.032
60	10	5.040
60	12	8.120
60	15	7.650
60	20	10.200
60	30	15.120
60	40	20.160
70	5	2.975
70	6	3.528
70	8	4.704
70	10	5.950
70	12	7.140
70	20	11.760
80	4	2.720
80	5	3.400
80	6	4.080
80	10	6.800
80	15	10.200
80	20	13.440
80	25	16.880
80	30	20.160
80	40	26.880
80	50	33.600
90	2	1.512
90	5	3.780
90	10	7.560
90	15	11.340
90	70	52.920
100	5	4.200
100	8	6.720
100	10	8.400
100	12	10.320
100	15	12.600
100	20	16.800
100	25	21.000
100	30	25.200
100	50	42.000
120	10	10.080
120	40	40.320
125	60	63.000
140	60	71.400
150	10	12.600
150	20	25.200
150	70	89.250
160	10	13.600

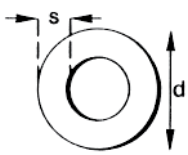
d	s	KG/MTR
4	0,5	0,015
4	1	0,025
5	1	0,034
6	0,5	0,023
6	1	0,042
7	1	0,051
8	0,75	0,046
8	1	0,059
8	1,5	0,083
10	0,75	0,059
10	1	0,076
10	1,5	0,108
10	2	0,136
10	2,5	0,159
10	3	0,178
12	1	0,096
12	1,5	0,134
12	2	0,170
12	3	0,229
13	1	0,102
13	1,5	0,146
13	3	0,254
14	2	0,203
15	1	0,119
15	1,5	0,172
15	2	0,220
16	1	0,127
16	1,5	0,184
16	2	0,237
16	3	0,331
18	1,5	0,205
18	2	0,271
18	3	0,382
18	4	0,475
20	0,5	0,085
20	1	0,161
20	1,5	0,235
20	2	0,301
20	2,5	0,371
20	3	0,426
20	5	0,659
22	1,5	0,261
22	2	0,348
23	2	0,376
24	2	0,394
25	1,5	0,307
25	2	0,390
25	2,5	0,477
25	3	0,560
25	3,5	0,655
25	5	0,848
26	2	0,407
26	3	0,585
28	1,5	0,337
28	2	0,453
28	2,5	0,540
28	3	0,636
28	4	0,835
28	5	0,975
30	1,5	0,376
30	2	0,475
30	2,5	0,583
30	3	0,687
30	4	0,882
30	5	1,060
30	7	1,365
30	7,5	1,431
32	2	0,509

d	s	KG/MTR
35	1,5	0,426
35	2	0,560
35	2,5	0,689
35	3	0,859
35	4	1,079
35	5	1,305
35	7,5	1,749
36	2	0,591
36	3	0,839
37	3	0,881
37	4	1,140
38	3	0,890
39	3,5	1,073
40	1,5	0,490
40	2	0,644
40	2,5	0,795
40	3	0,941
40	3,5	1,143
40	4	1,221
40	5	1,484
40	6	1,775
40	7	1,929
40	10	2,543
42	2	0,678
42	3	0,992
42	5	1,568
42	9	2,658
44	3	1,101
44	12	3,183
45	2,5	0,901
45	5	1,740
45	8	2,576
45	10	2,967
47	3	1,181
48	3	1,145
48	4	1,492
48	5	1,924
50	1,5	0,617
50	2	0,814
50	2,5	1,007
50	3	1,195
50	4	1,601
50	5	1,958
50	6	2,238
50	7	2,619
50	8	2,849
50	10	3,391
50	12,5	3,976
51	4	1,570
52	4	1,628
52	6	2,288
53	6	2,524
54	9	3,624
55	2,5	1,113
55	5	2,120
55	10	3,815
56	3	1,348
57	3	1,450
57	8,5	3,443
58	5	2,288
60	2	0,983
60	2,5	1,219
60	3	1,450
60	4	2,005
60	5	2,392
60	6	2,747
60	8	3,529
60	10	4,239

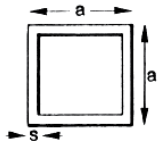
d	s	KG/MTR
60	15	5,723
61	11	4,594
64	4	1,990
65	2,5	1,325
65	4	2,023
65	5	2,543
65	10	4,663
65	15	6,362
65	20	7,630
66	3	1,662
67	8,5	4,216
70	2	1,153
70	2,5	1,409
70	3	1,704
70	4	2,321
70	5	2,857
70	8	4,207
70	10	5,087
70	15	7,176
70	20	8,478
72	5	2,798
74	14	7,122
75	2	1,219
75	2,5	1,537
75	5	3,044
75	10	5,511
76	3	1,857
80	2	1,323
80	2,5	1,643
80	3	1,915
80	5	3,179
80	6	3,708
80	8	4,883
80	10	5,935
80	15	8,511
80	20	10,174
85	2,5	1,749
85	5	3,481
85	10	6,359
86	3	2,111
90	2,5	1,855
90	3	2,213
90	5	3,603
90	10	6,782

d	S	KG/MTR
90	11	7.367
90	15	9.785
90	20	11.869
90	25	13.777
95	2.5	1.961
95	7.5	5.564
95	10	7.046
100	2	1.662
100	2.5	2.067
100	4	3.256
100	5	4.027
100	10	7.832
100	12	8.953
100	12.5	9.273
100	15	10.809
100	16	11.690
100	20	13.916
100	21.25	14.187
100	25	15.896
105	10	8.054
105	15	11.445
106	3	2.620
108	4	3.527
108	5	4.482
110	3	2.721
110	5	4.451
110	10	8.702
110	15	12.081
110	20	15.260
110	25	18.016
120	3	2.976
120	5	4.875
120	8	7.596
120	10	9.326
120	12.5	11.688
120	15	13.353
120	20	16.956
120	25	20.657
125	3	3.103
125	5	5.087
125	10	9.750
130	3	3.230
130	5	5.436
130	10	10.174
130	15	14.625
130	20	18.652
132	20	19.000
133	12.5	12.770
135	5	5.511
135	9	9.614
135	10	10.598
140	5	5.723
140	7.5	8.425
140	10	11.430
140	15	15.904
140	20	20.347
140	25	25.277
140	30	28.703
150	3	3.739
150	5	6.055
150	7.5	9.061
150	8	9.631
150	10	11.605
150	15	17.168
150	17.5	19.658
150	20	22.043

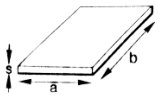
d	S	KG/MTR
150	25	26.494
160	4	5.293
160	5	6.570
160	6	7.838
160	8	10.309
160	10	12.717
160	15	18.440
160	20	23.738
160	30	34.901
161	4	5.324
165	25	30.442
170	3	4.247
170	5	6.994
170	10	13.565
170	12.5	16.691
170	15	19.711
170	20	25.434
170	25	31.871
170	45	47.689
180	6	8.851
180	10	14.413
180	15	21.527
180	20	27.130
185	9	13.429
190	3	4.756
190	6	9.360
190	10	15.260
200	4	6.647
200	5	8.266
200	6	9.868
200	8	13.022
200	10	16.108
200	12.5	19.870
200	15	23.526
200	20	30.521
200	25	37.091
200	27.5	40.218
200	4	6.918
210	5	8.690
210	10	16.956
210	20	32.216
220	10	18.265
220	15	26.070
220	30	48.325
230	6	11.394
230	10	18.652
230	15	27.342
230	25	43.450



Aluminium Square Tube



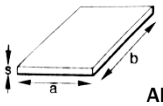
a	a	s	KG/MTR
10	10	1	0.097
15	15	2	0.281
20	10	2	0.281
20	20	2	0.389
25	15	2	0.389
25	25	1.5	0.391
25	25	2	0.497
30	10	1.5	0.300
30	15	2	0.443
30	20	2	0.497
30	30	2	0.605
30	30	3	0.875
34	20	3	0.778
35	35	2	0.713
40	20	2	0.605
40	20	2.5	0.743
40	20	3	0.875
40	25	3	0.956
40	25	5	1.524
40	35	2.5	0.945
40	40	2	0.821
40	40	2.5	1.013
40	40	3	1.199
40	40	4	1.596
50	20	2	0.713
50	25	2	0.767
50	30	3	1.199
50	40	4	1.771
50	50	3	1.523
50	50	4	1.987
60	20	2	0.821
60	30	3	1.361
60	40	2.5	1.283
60	40	3	1.523
60	40	4	1.987
60	60	3	1.847
60	60	4	2.419
80	40	3	1.847
80	40	4	2.419
80	50	4	2.635
80	60	4	2.851
80	80	3	2.495
80	80	4	3.283
100	18	2	1.231
100	30	3	2.009
100	40	4	2.851
100	50	2	1.577
100	50	3	2.333
100	50	4	3.067
100	100	4	4.147
120	40	4	3.283
120	50	4	3.499
140	40	2	1.901
150	40	4	3.931
150	50	4	4.147
160	40	4	4.147
180	40	4	4.579
200	50	4	5.227
200	80	4	5.875



s	a	b	KG/sqm
0.3	500	2000	0.810
0.5	1000	1000	1.400
0.5	1000	2000	1.330
0.5	1250	2500	1.385
0.6	1000	2000	1.662
0.6	1220	3660	1.662
0.7	1000	2000	1.862
0.8	1000	2000	2.128
0.8	1220	3660	2.216
0.81	1220	2500	2.244
1	1000	2000	2.660
1	1220	3660	2.770
1	1250	2500	2.770
1	1500	3000	2.660
1.01	445	1220	2.828
1.2	1000	2000	3.192
1.2	1220	2500	3.324
1.2	1220	3660	3.324
1.2	1250	2500	3.324
1.2	1500	3000	3.240
1.27	445	1220	3.556
1.3	1220	3660	3.601
1.5	1000	2000	4.200
1.5	1020	2020	4.155
1.5	1250	2500	3.990
1.5	1500	3000	3.990
1.6	1220	3660	4.432
1.6	1250	2500	4.432
1.8	2000	5000	4.986
2	1000	2000	5.320
2	1220	3660	5.540
2	1250	2500	5.540
2	1500	3000	5.320
2	1980	2646	5.320
2.3	1220	3660	6.371
2.5	1000	2000	6.650
2.5	1200	3000	6.925
2.5	1200	5000	6.925
2.5	1250	2500	6.925
2.5	1500	3000	6.650
2.5	1700	4700	6.925
2.5	1850	2350	6.925
3	1000	2000	7.980
3	1220	3660	8.310
3	1250	2500	7.980
3	1250	3200	8.310
3	1500	2500	8.310
3	1500	3000	8.040
3.2	1200	2200	8.864
3.2	1700	2700	8.864
3.8	1000	2000	10.260
4	1000	2000	10.640
4	1220	3660	11.080
4	1250	2500	11.080
4	1380	4535	11.080
4	1500	2510	11.080
4	1500	2800	10.640
4	1500	3000	10.640
4.5	1500	3000	12.150
5	1000	2000	13.850

s	a	b	KG/sqm
5	1000	3550	13.500
5	1250	2500	13.850
5	1500	2500	13.850
5	1500	3000	13.300
6	1000	2000	15.960
6	1020	2020	16.680
6	1250	2500	16.620
6	1250	5000	15.960
6	1500	3000	16.620
6	1500	4000	16.200
6.5	1200	2000	17.290
7	2610	5200	18.620
8	1000	2000	21.280
8	1020	2020	21.600
8	1025	3955	21.280
8	1250	2500	22.160
8	1500	3000	21.280
10	1000	2000	27.000
10	1020	2020	27.000
10	1200	1980	28.000
10	1250	2500	26.600
10	1500	3000	26.600
12	670	1090	33.600
12	1000	2000	31.920
12	1020	2020	33.240
12	1250	2500	33.240
12	1500	3000	31.920
14	975	2260	37.800
15	1000	2000	39.900
15	1005	3160	39.900
15	1020	2020	40.500
15	1250	2500	39.900
15	1500	3000	39.900
16	1020	2020	44.320
16	1250	2500	44.800
20	1000	2000	53.200
20	1010	1470	56.000
20	1020	2020	53.200
20	1250	2500	56.000
20	1500	3000	53.200
25	1000	2000	66.500
25	1020	2020	69.250
25	1200	1400	69.250
25	1215	3030	69.250
25	1250	2500	69.250
25	1500	2500	70.000
25	1500	3000	66.500
26	1500	3000	72.280
30	10U0	2000	79.800
30	1010	4100	79.800
30	1020	2020	83.100
30	1200	1750	84.000
30	1250	2500	84.000
30	1490	3000	83.400
30	1500	3000	79.800
30	2020	3500	79.800
32	12U0	2000	88.640
32	1250	2500	89.600
33.8	1020	2020	93.626
3.5	1500	3000	98.000

s	a	b	KG/sqm
40	1000	2000	106.400
40	1020	2020	110.800
40	1200	2000	110.800
40	1200	2500	112.000
40	1250	2500	112.000
40	1250	2520	110.800
40	1270	2520	112.000
40	150D	3000	111.200
42	1000	2000	116.760
45	950	1870	126.000
45	1020	2020	125.100
45	1250	2500	126.000
45	1440	2900	126.000
50	1000	2000	133.000
50	1020	2020	138.500
50	1200	2500	138.500
50	1250	2500	140.000
50	1500	2500	138.500
50	1500	3000	139.000
52	1020	2020	144.560
55	1500	3000	152.900
60	1000	2000	168.000
60	1020	2020	162.000
60	1500	3000	166.200
60	1520	3020	168.000
63	l0D0	2000	176.400
63	1200	2500	174.510
63	1500	2500	176.400
70	375	3000	194.600
70	850	2200	196.000
70	1000	2000	194.600
70	1020	2020	186.200
70	1400	2100	193.900
70	1500	3000	186.200
77	1500	3000	214.060
80	1000	2000	221.600
80	1020	2020	212.800
80	1200	2500	224.000
80	1250	2500	224.000
80	1500	3000	222.400
85	750	2200	238.000
85	1500	3000	236.300
90	1000	2000	252.000
90	1205	3200	250.200
90	1500	3000	239.400
100	1000	2000	266.000
100	1020	2020	280.000
100	1200	2500	277.000
100	1300	2300	277.000
100	1500	3000	278.000
105	1265	3000	291.900
110	1000	2000	292.600
110	1500	3000	305.800
120	1000	2000	333.600
120	1110	3000	333.600
120	1180	2020	333.600
120	1250	2500	336.000
120	1500	3000	332.400
125	1060	3000	347.500
130	1000	2000	364.000



Aluminium Sheets/Plates

s	a	b	KG/sqm
130	1020	2020	345.800
130	1020	3000	361.400
140	560	1200	378.000
140	945	3000	389.200
140	1020	2020	389.200
140	1020	3000	389.200
145	1000	2000	391.500
150	900	2020	417.000
150	1020	2020	417.000
150	1020	3000	417.000
150	1500	3000	399.000
15B	1020	2020	420.280
160	855	2020	444.800
160	1020	2020	444.800
170	1010	2020	472.600
180	1000	2000	478.800
180	1020	2020	500.400
190	1020	2020	528.200
200	1D20	2020	556.000
210	1020	2020	558.600
220	1020	2020	611.600
250	1020	2020	695.000
300	1020	2020	834.000

Aluminium Tread Plate

s1	s2	a	b	KG/sqm
2.5	4	1000	2000	7.30
2.5	9	1250	2500	7.30
2.5	4	1500	3000	7.30
3.5	5	1000	2000	10.00
3.5	5	1500	3000	10.00
4	5.5	1000	4000	11.50
5	6.5	1000	2000	14.40
5	6.5	1250	2500	14.40
5	6.5	1500	3000	14.40
5	7	1500	3000	14.58
8	9.5	1500	3000	22.99

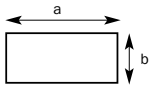
Aluminium Tread Plate

s1	s2	a	b	KG/sqm
2.5	4	1250	2500	7.30
2.5	4	1500	3000	7.30
5	6.5	1770	3300	14.58

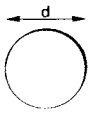
a	b	KG/MTR
10	2	0,054
10	3	0,083
10	4	0,108
10	5	0,133
10	6	0,160
10	7	0,200
10	8	0,216
12	3	0,097
12	5	0,162
15	2	0,081
15	3	0,122
15	4	0,162
15	5	0,203
15	6	0,239
15	8	0,324
15	10	0,405
19,05	6,35	0,335
20	2	0,108
20	3	0,162
20	4	0,216
20	5	0,277
20	6	0,324
20	8	0,432
20	10	0,540
20	12	0,648
20	15	0,831
24	10	0,634
25	2	0,135
25	3	0,203
25	4	0,264
25	5	0,338
25	6	0,405
25	8	0,540
25	10	0,693
25	12	0,810
25	15	1,013
25	20	1,350
30	2	0,162
30	3	0,249
30	4	0,319
30	5	0,405
30	6	0,499
30	8	0,638
30	10	0,810
30	12	0,972

a	b	KG/MTR
30	15	1,215
30	20	1,620
35	2	0,189
35	3	0,291
35	4	0,378
35	5	0,473
35	6	0,567
35	8	0,756
35	10	0,945
40	2	0,213
40	3	0,319
40	4	0,432
40	5	0,540
40	6	0,648
40	8	0,864
40	10	1,080
40	12	1,296
40	15	1,620
40	20	2,160
40	25	2,700
40	30	3,240
45	12	1,458
50	2	0,270
50	3	0,399
50	4	0,540
50	5	0,675
50	6	0,810
50	8	1,080
50	10	1,350
50	12	1,620
50	15	2,025
50	20	2,700
50	25	3,463
50	30	4,050
60	3	0,486
60	4	0,665
60	5	0,810
60	6	0,972
60	8	1,277
60	10	1,620
60	15	2,493
60	20	3,384
60	25	4,230
60	30	5,130
60	40	6,840

a	b	KG/MTR
60	45	7.290
65	5	0.878
70	5	0.931
70	10	1.890
70	15	2.835
70	20	3.780
70	30	5.985
75	3	0.608
75	9	1.796
75	20	4.050
80	5	1.080
80	6	1.330
80	10	2.160
80	15	3.240
80	20	4.432
80	25	5.700
80	30	6.480
80	40	8.640
80	50	11.080
85	30	6.885
90	5	1.215
90	10	2.430
90	60	14.580
100	4	1.080
100	5	1.350
100	6	1.620
100	8	2.160
100	10	2.700



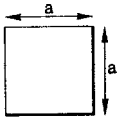
Aluminium round bar



d	KG/MTR
1	0.002
2	0.008
2.5	0.014
3	0.020
4	0.035
5	0.053
6	0.075
7	0.107
7.5	0.119
8	0.133
9	0.172
10	0.220
11	0.256
12	0.317
14	0.426
15	0.495
16	0.563
18	0.705
20	0.879
21	0.987
22	1.052
24	1.221
25	1.359
26	1.486
27	1.545
28	1.637
30	1.908
31	2.037
32	2.251
35	2.741
36	2.818
38	3.140
40	3.517
45	4.197
46	4.651
50	5.495
55	6.601
56	6.893
60	7.828
62	8.147
63	8.724
64	8.907
65	9.187
70	10.655
75	12.231
80	14.067
82	14.040
85	15.710
90	17.804
95	19.632
100	21.980
110	26.996
120	31.651
125	33.976
130	36.748

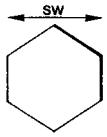
d	KG/MTR
140	42.619
145	44.562
150	49.455
153	48.880
155	52.807
160	56.269
170	63.522
175	64.910
180	71.215
185	72.540
190	78.781
195	80.594
200	86.978
210	95.893
220	108.283
230	117.105
240	125.700
245	127.223
248	137.600
250	135.903
260	147.523
270	152.222
280	170.477
290	184.852
295	194.697
298	184.037
300	196.407
310	200.666
314	208.97b
320	223.468
330	227.394
340	241.384
350	267.332
360	270.618
370	285.861
380	301.522
400	334.096
420	368.341
430	386.090
440	404.256
450	422.840
460	441.842
470	461.261
480	481.098
490	501.353
500	522.025
510	543.115
520	564.622
530	586.547
540	608.890
560	654.828
630	828.767

Aluminium square bar



a	a	KG/MTR
5	5	0.069
6	6	0.097
8	8	0.173
10	10	0.270
12	12	0.389
14	14	0.543
15	15	0.608
16	16	0.691
18	18	0.875
20	20	1.128
24	24	1.555
25	25	1.781
30	30	2.565
35	35	3.308
40	40	4.560
45	45	5.468
50	50	7.125
55	55	8.168
60	60	10.260
65	65	12.041
70	70	13.965
80	80	18.240
100	100	28.200
110	110	32.670
120	120	38.880
130	130	45.630
140	140	52.920
150	150	64.125
180	180	87.480
200	200	108.000

Aluminium hexagon bar



sw	KG/MTR
5	0.058
6	0.084
7	0.115
10	0.247
12	0.355
13	0.407
14	0.484
17	0.713
19	0.891
22	1.194
24	1.421
27	1.799
30	2.182
32	2.527
36	3.198
50	5.845
65	9.878
100	23.400

mm			kg/m
21	x	9	2,53
26	x	9	4,20
		14	3,39
31	x	14	5,40
		19	4,23
36	x	14	7,76
		19	6,60
		24	5,08
41	x	14	10,48
		19	9,31
		24	7,80
		29	5,92
46	x	14	13,56
		19	12,39
		24	10,87
		29	9,00
		34	6,78
51	x	19	15,82
		24	14,30
		29	12,42
		34	10,20
		39	7,62
56	x	19	19,60
		24	18,07
		29	16,20
		34	13,98
		39	11,40
61	x	24	22,20
		29	20,34
		34	18,11
		39	15,53
		44	12,60
66	x	24	26,69
		29	24,82
		34	22,60
		39	20,02
		44	17,09
		49	13,80
71	x	24	31,53
		29	29,66
		34	27,43
		39	24,82
		44	21,93
		49	18,64
		54	15,01
76	x	24	36,73
		29	34,85
		34	32,63
		39	30,05
		44	27,12
		49	23,84
		54	20,19
		59	16,20

mm			kg/m
81	x	29	40,40
		34	38,17
		39	35,59
		44	32,67
		49	29,38
		54	25,74
		59	21,75
86	x	29	46,30
		34	44,08
		39	41,50
		44	38,57
		49	35,28
		54	31,64
		59	27,64
		64	23,30
91	x	29	52,55
		34	50,33
		39	47,74
		44	44,82
		49	41,53
		54	37,90
		59	33,90
		64	29,55
		69	24,85
96	x	29	59,16
		34	56,93
		39	54,35
		44	51,41
		49	48,14
		54	44,49
		59	40,50
		64	36,16
		69	31,46
		74	26,42
101	x	39	61,31
		44	58,38
		49	55,09
		54	51,46
		59	47,47
		64	43,12
		69	38,42
		74	33,37
		79	27,97
101	x	39	68,62
		44	65,69
		49	62,41
		54	58,76
		59	54,78
		64	50,43
		69	45,73
		74	40,69
		79	35,28

mm			kg/m
111	x	39	76,28
		44	73,35
		49	70,07
		54	66,43
		59	62,44
		64	58,09
		69	53,40
		74	48,35
		79	42,94
116	x	44	81,79
		49	78,49
		54	74,83
		59	70,82
		64	66,45
		69	61,73
		74	56,65
		79	51,22
		84	45,44
		89	39,29
121	x	54	83,24
		59	79,23
		64	74,86
		69	70,14
		74	65,07
		79	59,64
		84	53,85
		89	47,71
		94	41,21
		99	34,36
126	x	59	88,00
		64	83,63
		69	78,91
		74	73,84
		79	68,40
		84	62,62
		89	56,48
		94	49,98
		99	43,13
		104	35,92
141	x	59	97,12
		69	88,04
		79	77,53
		89	65,60
		99	52,25
		109	37,48
131	x	59	116,44
		69	107,35
		79	96,84
		89	84,91
		99	71,56
		109	56,80
		119	40,61

mm			kg/m
150	x	60	133,51
		70	124,33
		80	113,73
		90	101,72
		100	88,30
		110	73,46
		120	57,21
		130	39,55
160	x	70	146,23
		80	135,62
		90	123,61
		100	110,19
		110	95,36
		120	79,11
		130	61,45
		140	42,38
170	x	70	169,54
		80	158,93
		90	146,82
		100	133,51
		110	118,67
		120	102,43
		130	84,77
		140	65,69
		160	45,20
180	x	80	183,66
		90	171,65
		100	158,22
		110	143,38
		120	127,15
		130	109,49
		140	90,41
		150	69,93
		160	48,02
190	x	80	209,80
		90	197,79
		100	184,37
		110	169,52
		120	153,28
		130	135,63
		140	116,56
		150	96,06
		160	74,17
		170	50,86
200	x	90	225,35
		100	212,35
		110	197,08
		120	180,85
		130	163,19
		140	144,10
		150	123,62
		160	101,72
		170	78,40
		180	53,68

mm			kg/m
250	x	100	370,88
		110	356,03
		120	339,80
		130	322,14
		140	303,05
		150	282,57
		160	260,67
		170	237,35
		180	212,63
		190	187,44
		200	158,94
300	x	120	534,07
		130	516,41
		140	497,33
		150	476,84
		160	454,94
		170	431,62
		180	406,90
		190	382,69
		200	353,22
		210	325,89
		220	295,36
		230	263,41
		240	230,04
		250	194,27
350	x	150	706,53
		160	684,63
		170	661,22
		180	636,60
		190	610,46
		200	582,81
		210	553,94
		220	523,56
		230	491,77
		240	458,57
		250	423,86
		260	387,87
		270	350,43
		280	311,57
		290	271,30
		300	229,59
350	x	200	847,72
		210	818,90
		220	788,52
		230	756,73
		240	723,53
		250	688,77
		260	652,82
		270	615,38
		280	576,52
		290	536,25
		300	494,50
		310	451,48
		320	406,96
		330	361,03
		340	313,69
		350	264,91

Hollow Bars - Sizes and weights

mm			kg/m
21	x	9	2,53
26	x	9	4,20
		14	3,39
31	x	14	5,40
		19	4,23
36	x	14	7,76
		19	6,60
		24	5,08
41	x	14	10,48
		19	9,31
		24	7,80
		29	5,92
46	x	14	13,56
		19	12,39
		24	10,87
		29	9,00
		34	6,78
51	x	19	15,82
		24	14,30
		29	12,42
		34	10,20
		39	7,62
56	x	19	19,60
		24	18,07
		29	16,20
		34	13,98
		39	11,40
61	x	24	22,20
		29	20,34
		34	18,11
		39	15,53
		44	12,60
66	x	24	26,69
		29	24,82
		34	22,60
		39	20,02
		44	17,09
		49	13,80
71	x	24	31,53
		29	29,66
		34	27,43
		39	24,82
		44	21,93
		49	18,64
		54	15,01
76	x	24	36,73
		29	34,85
		34	32,63
		39	30,05
		44	27,12
		49	23,84
		54	20,19
		59	16,20

mm			kg/m
81	x	29	40,40
		34	38,17
		39	35,59
		44	32,67
		49	29,38
		54	25,74
		59	21,75
86	x	29	46,30
		34	44,08
		39	41,50
		44	38,57
		49	35,28
		54	31,64
		59	27,64
		64	23,30
91	x	29	52,55
		34	50,33
		39	47,74
		44	44,82
		49	41,53
		54	37,90
		59	33,90
		64	29,55
		69	24,85
96	x	29	59,16
		34	56,93
		39	54,35
		44	51,41
		49	48,14
		54	44,49
		59	40,50
		64	36,16
		69	31,46
		74	26,42
101	x	39	61,31
		44	58,38
		49	55,09
		54	51,46
		59	47,47
		64	43,12
		69	38,42
		74	33,37
		79	27,97
101	x	39	68,62
		44	65,69
		49	62,41
		54	58,76
		59	54,78
		64	50,43
		69	45,73
		74	40,69
		79	35,28

mm			kg/m
111	x	39	76,28
		44	73,35
		49	70,07
		54	66,43
		59	62,44
		64	58,09
		69	53,40
		74	48,35
		79	42,94
116	x	44	81,79
		49	78,49
		54	74,83
		59	70,82
		64	66,45
		69	61,73
		74	56,65
		79	51,22
		84	45,44
		89	39,29
121	x	54	83,24
		59	79,23
		64	74,86
		69	70,14
		74	65,07
		79	59,64
		84	53,85
		89	47,71
		94	41,21
		99	34,36
126	x	59	88,00
		64	83,63
		69	78,91
		74	73,84
		79	68,40
		84	62,62
		89	56,48
		94	49,98
		99	43,13
		104	35,92
141	x	59	97,12
		69	88,04
		79	77,53
		89	65,60
		99	52,25
		109	37,48
131	x	59	116,44
		69	107,35
		79	96,84
		89	84,91
		99	71,56
		109	56,80
		119	40,61

mm			kg/m
150	x	60	133,51
		70	124,33
		80	113,73
		90	101,72
		100	88,30
		110	73,46
		120	57,21
		130	39,55
160	x	70	146,23
		80	135,62
		90	123,61
		100	110,19
		110	95,36
		120	79,11
		130	61,45
		140	42,38
170	x	70	169,54
		80	158,93
		90	146,82
		100	133,51
		110	118,67
		120	102,43
		130	84,77
		140	65,69
		160	45,20
180	x	80	183,66
		90	171,65
		100	158,22
		110	143,38
		120	127,15
		130	109,49
		140	90,41
		150	69,93
		160	48,02
190	x	80	209,80
		90	197,79
		100	184,37
		110	169,52
		120	153,28
		130	135,63
		140	116,56
		150	96,06
		160	74,17
		170	50,86
200	x	90	225,35
		100	212,35
		110	197,08
		120	180,85
		130	163,19
		140	144,10
		150	123,62
		160	101,72
		170	78,40
		180	53,68

mm			kg/m
250	x	100	370,88
		110	356,03
		120	339,80
		130	322,14
		140	303,05
		150	282,57
		160	260,67
		170	237,35
		180	212,63
		190	187,44
		200	158,94
300	x	120	534,07
		130	516,41
		140	497,33
		150	476,84
		160	454,94
		170	431,62
		180	406,90
		190	382,69
		200	353,22
		210	325,89
		220	295,36
		230	263,41
		240	230,04
		250	194,27
350	x	150	706,53
		160	684,63
		170	661,22
		180	636,60
		190	610,46
		200	582,81
		210	553,94
		220	523,56
		230	491,77
		240	458,57
		250	423,86
		260	387,87
		270	350,43
		280	311,57
		290	271,30
		300	229,59
350	x	200	847,72
		210	818,90
		220	788,52
		230	756,73
		240	723,53
		250	688,77
		260	652,82
		270	615,38
		280	576,52
		290	536,25
		300	494,50
		310	451,48
		320	406,96
		330	361,03
		340	313,69
		350	264,91

Liefermaß mm Ø	für Fertigmaß mm Ø	Gewicht kg/m	Liefermaß mm Ø	für Fertigmaß mm Ø	Gewicht kg/m	Liefermaß mm Ø	für Fertigmaß mm Ø	Gewicht kg/m
162x58	160 x60	156,4	138	140	96,2	222 x 158	220 x 160	166,2
68	70	147,8	148	150	76,7	178	180	120,3
78	80	137,8	158	160	55,8	232 x 138	230 x 140	237,6
88 1) 2)	90	126,4	192 x 108	190 x 110	172,2	178	180	186,1
98 1) 2)	100	113,7	148	150	102,2	242 x 118	240 x 120	305
108 1) 2)	110	99,6	158	160	81,3	158	160	229,6
118 1) 2)	120	84,2	202 x 98	200 x 100	213,2	252 x 158	250 x 160	284,2
128	130	67,4	118	120	183,7	178	180	217,4
138	140	49,2	138	140	148,7	262 x 178	260 x 180	252,5
172 x 88	170 x 90	149,2	158	160	108,2	188	190	227,5
98	100	136,5	212 x 178	210 x 180	92,7	272 x 208	270 x 210	210
108	110	122,5	222 x 98	220 x 100	271,2	282 x 218	280 x 220	218,7
118	120	107,0	118	120	241,6	233	235	172,4
128	130	90,2				248	250	123,1
138	140	72,0				302 x 218	300 x 220	298,5
148	150	52,5				312 x 208	310 x 210	369,5
182 x 98	180 x 100	160,7						
118	120	131,2						
128	130	114,4						

Flat bars - electric continuous casting

Liefermaß mm Ø	für Fertigmaß mm Ø	Gewicht kg/m	Liefermaß mm Ø	für Fertigmaß mm Ø	Gewicht kg/m	Liefermaß mm Ø	für Fertigmaß mm Ø	Gewicht kg/m
52 x 12	50 x 10	5,6	15	12	9,7	23	20	29,2
14	12	6,5	19	16	12,3	163 x 19	160 x 16	27,6
18	16	8,3	23	20	15	23	20	33,4
22	20	10,2	83 x 13	80 x 10	9,6	183 x 19	180 x 16	31
62 x 12	60 x 10	6,6	15	12	11,1	23	20	37,4
14	12	7,7	19	16	14	203 x 19	200 x 16	34,4
18	16	10	23	20	17	23	20	41,5
22	20	12,2	103 x 13	100 x 10	11,9	310 x 45	300 x 40	124,2
67 x 12	65 x 10	7,2	15	12	13,8	55	50	151,7
14	12	8,4	19	16	17,4			u.s.w.
18	16	10,7	23	20	21,4			
22	20	13,1	123 x 19	120 x 16	20,8			
32	30	19,1	123 x 19	120 x 20	25,2			
73 x 13	70 x 10	8,5	143 x 19	140 x 16	24,2			

Square bars - electric continuous casting

Liefermaß mm Ø	für Fertigmaß mm Ø	Gewicht kg/m	Liefermaß mm Ø	für Fertigmaß mm Ø	Gewicht kg/m	Liefermaß mm Ø	für Fertigmaß mm Ø	Gewicht kg/m
32 x 32*	30 x 30	9,1	62 x 62*	60 x 60	34,2	92 x 92*	90 x 90	75,8
42 x 42*	40 x 40	15,7	72 x 72*	70 x 70	47,5	102 x 102*	100 x 100	93
52 x 52*	50 x 50	24	82 x 82*	80 x 80	60,2	112 x 112*	110 x 110	115,0

ND	ND	Actual	10 Bar System		14 Bar System		16 Bar System		20 Bar System	
			WT	weight	WT	weight	WT	weight	WT	weight
inch	mm	mm	mm	KG/M	mm	KG/M	mm	KG/M	mm	KG/M
1/8		10	1,0	0,26	1,0	0,26	1,0	0,26	1,0	0,26
1/4		12	1,0	0,31	1,0	0,31	1,0	0,31	1,0	0,31
3/8	10	16	1,0	0,42	1,0	0,42	2,0	0,79	2,0	0,79
1/2	15	20	1,0	0,53	1,0	0,53	2,0	1,01	2,0	1,01
3/4	20	25	1,5	0,99	1,5	0,99	2,0	1,30	2,0	1,30
1	25	30	1,5	1,20	1,5	1,20	2,5	1,93	2,5	1,93
1 1/4	32	38	1,5	1,54	1,5	1,54	2,5	2,50	2,5	2,50
1 1/2	40	44	1,5	1,81	1,5	1,81	2,5	2,95	2,5	2,95
2	50	57	1,5	2,34	1,5	2,34	2,5	3,83	2,5	3,88
2 1/2	65	76,1	2,0	4,16	2,0	4,16	2,5	5,17	2,5	5,17
3	80	88,9	2,0	4,88	2,5	6,07	2,5	6,07	2,5	6,07
4	100	108	2,5	7,41	2,5	7,41	3,0	8,85	3,0	8,85
5	125	133	2,5	9,16	3,0	10,95	3,0	10,95	3,0	10,95
6	150	159	2,5	10,99	3,0	13,14	3,0	13,14	3,5	15,29
7	175	193,7	2,5	13,43	3,5	18,70	3,0	16,07	3,5	18,70
8	200	219,1	3,0	18,21	3,5	21,19	4,0	24,17	4,5	27,12
10	250	267	3,0	22,24	4,0	29,55	4,5	33,18	5,5	40,39
12	300	323,9	4,0	35,94	5,0	44,78	5,5	49,18	7,0	62,30
14	350	368	4,0	40,89	5,5	56,00	6,5	65,99	8,0	80,89
16	400	419	4,0	46,62	6,0	69,60	7,0	81,00	9,0	103,64
18	450	457,2	4,0	50,91	6,0	76,03	8,0	100,93	9,5	119,45
20	500	508	4,5	63,63	6,5	91,55	8,5	119,24	11,0	153,54
24	600	610	5,0	84,96	8,0	135,26	10,5	176,79	13,0	217,97
28	700	711	6,0	118,80	9,0	177,45	12,0	235,58	15,0	293,22
32	800	813	6,0	135,99	10,0	225,53	13,5	303,14	17,0	380,06
36	900	914	8,0	203,57	11,0	278,98	15,5	391,14	19,0	477,60

Pipes Seamless ASTM B 466
Welded ASTM B 467

Outside Diameter of pipe øD			**Wall thickness**		**Theoretical weight**	
nominal inch	actual inch	actual mm	actual inch	actual mm	Lb/Ft	Kg/m
SEAMLESS						
1/8	0,405	10,29	0,058	1,47	0,24	0,36
1/4	0,540	13,72	0,065	1,65	0,38	0,56
3/8	0,675	17,15			0,48	0,72
1/2	0,840	21,34			0,61	0,91
3/4	1,050	26,67			0,78	1,16
1	1,315	33,40			0,99	1,47
1 1/4	1,660	42,16	0,072	1,83	1,39	2,07
1 1/2	1,900	48,27			1,60	2,39
2	2,375	60,32	0,083	2,11	2,32	3,45
2 1/2	2,875	73,03			2,82	4,20
3	3,500	88,90	0,095	2,41	3,93	5,85
3 1/2	4,000	101,60			4,51	6,71
4	4,500	114,30	0,109	2,77	5,83	8,68
5	5,563	141,30	0,125	3,18	8,29	12,34
6	6,625	168,30	0,134	3,40	10,58	15,75
8	8,625	219,10			13,83	20,59
SEAMLESS OR SEAM WELDED						
10	10,750	273,05	0,134	3,40	17,29	25,74
12	12,750	323,90	0,156	3,96	23,90	35,58
14	14,000	355,60	0,165	4,19	27,78	41,35
16	16,000	406,40			31,80	47,33
18	18,000	457,20	0,180	4,57	39,03	58,10
20	20,000	508,00			43,41	64,62
SEAM WELDED						
24	24,000	609,60	0,180	4,57	52,17	77,66
30	30,000	762,00	0,250	6,35	90,54	134,77

Ouside diamter of pipe øD			Schedule 5S				Schedule 10S			
			Wall thickness		Theoretical weight		Wall thickness		Theoretical weight	
nominal	actual		actual		Lb/Ft	Kg/m	actual		Lb/Ft	Kg/m
inch	inch	mm	inch	mm			inch	mm		
SEAMLESS										
1/8	0,405	10,29					0,049	1,24	0,19	0,28
1/4	0,540	13,72					0,065	1,65	0,33	0,49
3/8	0,675	17,15					0,065	1,65	0,42	0,63
1/2	0,840	21,34	0,065	1,65	0,54	0,80	0,083	2,11	0,67	1,00
3/4	1,050	26,67	0,065	1,65	0,69	1,03	0,083	2,11	0,86	1,28
1	1,315	33,40	0,065	1,65	0,87	1,30	0,109	2,77	1,40	2,09
1 1/4	1,660	42,16	0,065	1,65	1,11	1,65	0,109	2,77	1,81	2,70
1 1/2	1,900	48,27	0,065	1,65	1,28	1,91	0,109	2,77	2,09	3,11
2	2,375	60,32	0,065	1,65	1,61	2,40	0,109	2,77	2,64	3,93
2 1/2	2,875	73,03	0,083	2,11	2,48	3,69	0,120	3,05	3,53	5,26
3	3,500	88,90	0,083	2,11	3,03	4,51	0,120	3,05	4,33	6,45
3 1/2	4,000	101,60	0,083	2,11	3,48	5,18	0,120	3,05	4,97	7,40
4	4,500	114,30	0,083	2,11	3,92	5,84	0,120	3,05	5,61	8,36
5	5,563	141,30	0,109	2,77	6,36	9,47	0,134	3,40	7,77	11,57
6	6,625	168,30	0,109	2,77	7,60	11,32	0,134	3,40	9,29	13,84
8	8,625	219,10	0,109	2,77	9,93	14,79	0,148	3,76	13,40	19,96
10	10,750	273,05	0,134	3,40	15,19	22,63	0,165	4,19	18,65	27,78
12	12,750	323,90	0,156	3,96	20,98	31,25	0,180	4,57	24,17	36,00

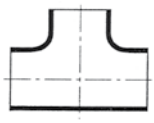
Ouside diamter of pipe øD			Schedule 40S				Schedule 80S			
			Wall thickness		Theoretical weight		Wall thickness		Theoretical weight	
nominal	actual		actual		Lb/Ft	Kg/m	actual		Lb/Ft	Kg/m
inch	inch	mm	inch	mm			inch	mm		
SEAMLESS										
1/8	0,405	10,29	0,068	1,73	0,24	0,37	0,095	2,41	0,31	0,47
1/4	0,540	13,72	0,088	2,24	0,42	0,63	0,119	3,02	0,54	0,80
3/8	0,675	17,15	0,091	2,31	0,57	0,84	0,126	3,20	0,74	1,10
1/2	0,840	21,34	0,109	2,77	0,85	1,27	0,147	3,73	1,09	1,62
3/4	1,050	26,67	0,113	2,87	1,13	1,69	0,154	3,91	1,47	2,20
1	1,315	33,40	0,133	3,38	1,68	2,50	0,179	4,55	2,17	3,24
1 1/4	1,660	42,16	0,140	3,56	2,27	3,39	0,191	4,85	3,00	4,47
1 1/2	1,900	48,27	0,145	3,68	2,72	4,05	0,200	5,08	3,63	5,41
2	2,375	60,32	0,154	3,91	3,65	5,44	0,218	5,54	5,02	7,48
2 1/2	2,875	73,03	0,203	5,16	5,79	8,63	0,276	7,01	7,66	11,41
3	3,500	88,90	0,216	5,49	7,58	11,29	0,300	7,62	10,25	15,27
3 1/2	4,000	101,60	0,226	5,74	9,11	13,57	0,318	8,08	12,51	18,63
4	4,500	114,30	0,237	6,02	10,79	16,07	0,337	8,56	14,98	22,32
5	5,563	141,30	0,258	6,55	14,62	21,77	0,375	9,53	20,78	30,97
6	6,625	168,30	0,280	7,11	18,97	28,26	0,432	10,97	28,57	42,56
8	8,625	219,10	0,322	8,18	28,55	42,55	0,500	12,70	43,39	64,64
10	10,750	273,05	0,365	9,27	40,48	60,31	0,500	12,70	54,74	96,01
12	12,750	323,90	0,375	9,53	49,56	73,88	0,500	12,70	65,42	132,08

Butt Weld Fittings

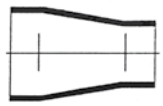
45° Elbows
Long and short radius
DIN 86090/EEMUA 146
ANSI B 16.9

90° Elbows
Long and short radius
DIN 86090/EEMUA 146
ANSI B 16.9

Tees
Equal and reducing
DIN 86088/EEMUA 146
ANSI B 16.9

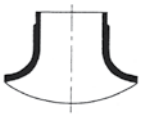


Reducer
Concentric and eccentric
DIN 86089/EEMUA 146
ANSI B 16.9



End Caps
DIN 28011/EEMUA 146
ANSI B 16.9

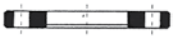
Saddles
Equal and reducing
DIN 86087/EEMUA 146



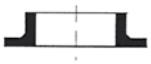
Flanges

Collars/Inner Flange
Long type/short type
DIN 86037/EEMUA 145
ANSI B 16.9

Carbon Steel
Outer flange
DIN 86037/EEMUA 145/
ANSI B 16.9



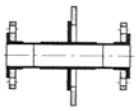
Composite Slip On Flange
DIN 86036
EEMUA 145/ISO NP 10



Solid Welding Neck
DIN 2632/2633
EEMUA 145/ISO NP 10

Solid Slip On
EEMUA 145/ANSI B 16.5

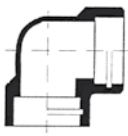
Bulkhead
DIN 86068



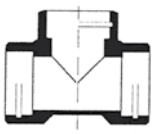
Forged and Machined Fittings

Elbows 45°
Socket Weld/Capillary
EEMUA 146

Elbows 90°
Socket Weld/Capillary
EEMUA 146

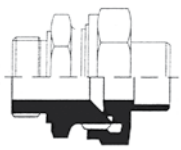


Equal and Reducing Tees
Socket Weld/Capillary
EEMUA 146



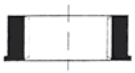
Straight/Half/Reducing
Couplings
Socket Weld/Capillary/Threaded

Male/Female Union Connectors
Socket Weld/Capillary/Butt Weld

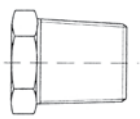


Adaptors
Butt Weld/Male or Female
Threaded

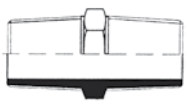
Sprinkler
Bushes



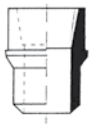
Plugs
Male
EEMUA 145



Nipples
Hexagonal/Pipes Threaded

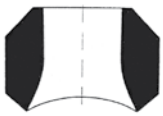


Welding Bosses
Threaded
EEMUA 146



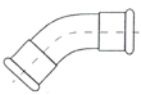
Caps
Socket Weld/Capillary/Threaded
EEMUA 146

Olets
Sockolet/Threadolet/
Weldolet
EEMUA 146

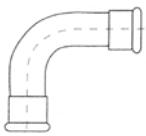


Press Fittings

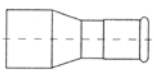
Elbows 45



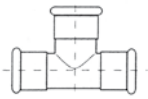
Elbows 90



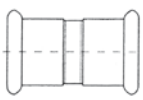
Reducer

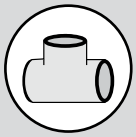


Tee



Coupling



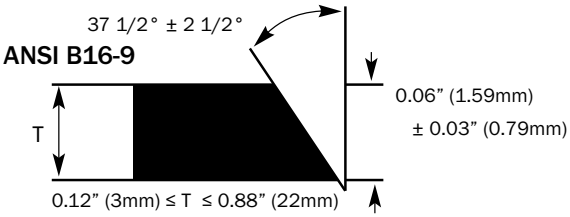


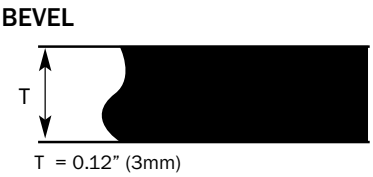
MSS SP-43

Nominal Pipe Size	All Fittings		90° Elbows 45 Elbows Tees	Reducers Lap Joint Stub Ends	180° Returns			Caps	Lap-Joint Stub Ends	
	Outside Diameter at Welding End	Wall Thickness	Center-to End Dimension ABCM	Overall Length FH	Center-to Centre Dimension P	Back-to-Face Dimension K	Alignment of End U	Over Length E	Fillet Radius of Lap A	Outside Diameter of Lap G
1/2 to 11/2	± 0.76	Not less than 87.5% of nominal thickness	± 1.52	± 1.52	± 6.35	± 6.35	± 0.76	± 3.05	+0 -0.76	+0 -0.76
2 to 3 1/2	±0.76		±1.52	±1.52	±6.35	±6.35	±0.76	±3.05	+0 -0.76	+0 -0.76
4	±0.76		±1.52	±1.52	±6.35	±6.35	±0.76	±3.05	+0 -1.52	+0 -0.76
5 to 8	+1.52 -0.76		±1.52	±1.52	±6.35	±6.35	±0.76	±6.35	+0 -1.52	+0 -0.76
10 to 18	+2.29 -0.76		±2.29	±2.29	±9.65	±6.35	±1.52	±6.35	+0 -1.52	+0 -1.52
20 to 24	+3.05 -0.76		±2.29	±2.29	±9.65	±6.35	±1.52	±6.35	+0 -1.52	+0 -1.52

ANSI B16-9

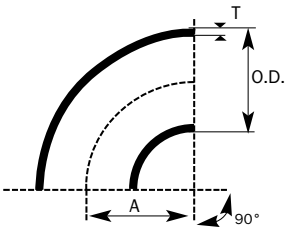
All Fittings				90° and 45 " Elbows and Tees	Reducers and Lap Joint Stub Ends	Caps	180° Returns			Lap-Joint Stub Ends		
Nominal Pipe Size	Outside Diameter at Bevel	Inside Diameter at End	Wall Thickness	Center-to End Dimension A B C M	Overall Length F H	Overall Length E	Center-to Centre Dimension P	Back-to-Face Dimension K	Alignment of End U	Outside Diameter of Lap G	Thickness of Lap T	Fillet Radius of Lap R
1/2 to 21/2	+1.52	±0.76 -0.76	Not less than 87.5% of nominal thickness	±1.52	±1.52	±3.05	±6.35	±6.35	±0.76	+0 -0.76	+1.52 -0	+0 -0.76
3 to 3 1/2	±1.52	±1.52		±1.52	±1.52	±3.05	±6.35	±6.35	±0.76	+0 -0.76	+1.52 -0	+0 -0.76
4	+1.52	±1.52		±1.52	±1.52	±3.05	±6.35	±6.35	±0.76 -0.76	+0 -0	+1.52 -1.52	+0
5 to 8	+2.29	±1.52 -1.52		±1.52	±1.52	±6.35	±6.35	±6.35	±0.76	+0 -0.76	+1.52 -0	+0 -1.52
10 to 18	+4.06	±3.05 -3.05		±2.29	±2.29	±6.35	±9.65	±6.35	±1.52	+0 -1.52	+1.52 -0	+0 -1.52
20 to 24	+6.35	±4.83 -4.83		±2.29	±2.29	±6.35	±9.65	±6.35	±1.52	+0 -1.52	+1.52 -0	+0 -1.52
26 to 30	+6.35	±4.83 -4.83		±3.05	±4.83	±9.65						
32 to 48	+6.35	±4.83 -4.83		±4.83	±4.83	±9.65						





90° Elbows Butt Weld
Long Radius

ASME/ASTM SA/A 403 WPS (Seamless) ANSI B-16-9
ASME/ASTM SA/A 403 WPW (Welded) ANSI B16-9
ASME/ASTM SA/A 403 WPWX (Welded/100% x Ray) ANSI B16-9



Dimensions (unit: mm)

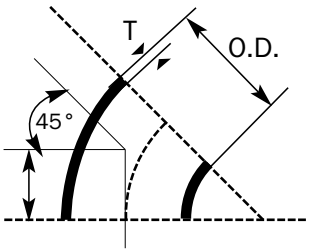
Nominal Pipe Size	Outside Dia. (OD)	Wall Thickness (T) Sch. 5S	Sch. 10S	STD Sch. 40S	XS Sch. 80 S	Centre to End (A)
1/2	21.34	1.65	2.11	2.77	3.73	38.10
3/4	26.67	1.65	2.11	2.87	3.91	28.45
1	33.4	1.65	2.77	3.38	4.55	38.10
1 1/4	42.16	1.65	2.77	3.56	4.85	47.75
1 1/2	48.26	1.65	2.77	3.68	5.08	5.15
2	60.32	1.65	2.77	3.91	5.54	76.20
2 1/2	73.02	2.11	3.05	5.16	7.01	95.25
3	88.90	2.11	3.05	5.49	7.62	114.3
3 1/2	10.60	2.11	3.05	5.74	8.08	133.35
4	114.30	2.11	3.05	6.02	8.56	152.4
5	141.30	2.77	3.40	6.55	9.53	190.50
6	168.27	2.77	3.40	7.11	10.97	228.60
8	219.08	2.77	3.796	8.18	12.7	304.80
10	273.05	3.40	4.19	9.27	12.70	381.00
12	323.85	3.96	4.57	9.53	12.70	457.20
14	355.60	4.78	7.92	9.53	12.70	533.40
16	406.40	4.78	7.92	9.53	12.70	609.60
18	457.20	4.78	7.92	9.53	12.70	685.80
20	508.00	5.54	9.53	9.53	12.70	762.00
22	558.80	5.54	9.53	9.53	12.70	838.20
24	609.60	6.35	9.53	9.53	12.70	914.40
26	660.40	7.92	12.70	9.53	12.70	990.60
28	711.20	7.92	12.70	9.53	12.70	1066.80
30	762.00	7.92	12.70	9.53	12.70	1143.00
32	812.80	7.92	12.70	9.53	12.70	1219.20
34	863.60	7.92	12.70	9.53	12.70	1295.40
36	914.40	7.92	12.70	9.53	12.70	1371.60
38	965.20	7.92		9.53	12.70	1447.80
40	1016.00	7.92		9.53	12.70	1524.00
42	1066.80	7.92		9.53	12.0	1600.20
44	1117.60	7.92		9.53	12.70	1676.40
46	1168.40	7.92		9.53	12.70	1752.60
48	1219.20	7.92		9.53	12.70	1828.80

Weights (unit: kg)

Nominal Pipe Size	STD Sch. 5S	XS Sch. 10S	Sch. 40S	Sch. 80S
1/2	0.049	0.061	0.078	0.100
3/4	0.062	0.078	0.103	0.104
1	0.078	0.128	0.154	0.204
1 1/4	0.125	0.206	0.260	0.349
1 1/2	0.170	0.283	0.368	0.507
2	0.286	0.478	0.652	0.938
2 1/2	0.576	0.812	1.37	1.79
3	0.810	1.140	2.04	2.87
3 1/2	1.08	1.53	2.82	4.10
4	1.39	1.97	3.84	5.62
5	2.83	3.42	6.48	9.69
6	4.06	4.87	9.94	15.99
8	7.06	10.00	20.10	32.16
10	13.20	15.50	35.40	49.83
12	22.30	25.90	56.20	72.48
14	34.60	57.58	66.36	85.53
16	45.20	70.03	87.11	112.34
18	57.30	89.01	110.67	142.79
20	82.00	136.99	136.99	176.90
22	99.40	163.03	163.03	210.83
24	136.00	198.05	198.05	256.13
26	198.00	296.76	229.17	296.53
28	230.00	345.05	266.50	344.96
30	264.00	397.15	306.59	396.74
32	301.00	453.00	349.53	452.68
34	339.00	512.16	395.24	511.98
36	381.00	575.13	443.71	574.95
38	425.00		497.71	644.75
40	471.00		551.98	715.51
42	520.00		606.16	785.77
4	571.00		669.04	867.40
46	624.00		7.31.69	948.81
48	679.00		797.28	1033.84

45° Elbows Butt Weld
Long Radius

ASME/ASTM SA/A 403 WPS (Seamless) ANSI B-16-9
ASME/ASTM SA/A 403 WPW (Welded) ANSI B16-9
ASME/ASTM SA/A 403 WPWX (Welded/100% x Ray) ANSI B16-9



Dimensions (unit: mm)

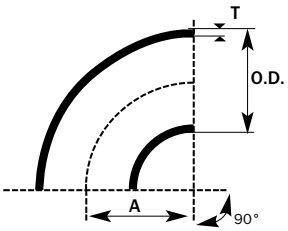
Nominal Pipe Size	Outside Dia. (OD)	Wall Thickness (T) Sch. 5S	Sch. 10S	STD Sch. 40S	XS Sch. 80 S	Centre to End (A)
1/2	21.34	1.65	2.11	2.77	3.73	15.88
3/4	26.67	1.65	2.11	2.87	3.91	11.13
1	33.40	1.65	2.77	3.38	4.55	22.22
1 1/4	42.16	1.65	2.77	3.56	4.85	25.40
1 1/2	48.26	1.65	2.77	3.68	5.08	28.45
2	60.32	1.65	2.77	3.91	5.54	35.05
2 1/2	73.02	2.11	3.05	5.16	7.01	44.45
3	88.90	2.11	3.05	5.49	7.62	50.80
3 1/2	101.60	2.11	3.05	5.74	8.08	57.15
4	114.30	2.11	3.05	6.02	8.56	63.50
5	141.30	2.77	3.40	6.55	9.53	79.25
6	168.27	2.77	3.40	7.11	10.97	95.25
8	219.08	2.77	3.76	8.18	12.70	127.00
10	273.05	3.40	4.19	9.27	12.70	158.75
12	323.85	3.96	4.57	9.53	12.70	190.50
14	355.60	4.78	7.92	9.53	12.70	222.25
16	406.40	4.78	7.92	9.53	12.70	254.00
18	457.20	4.78	7.92	9.53	12.70	285.75
20	508.00	5.54	9.53	9.53	12.70	317.50
22	558.80	5.54	9.53	9.53	12.70	342.90
24	609.60	6.35	9.53	9.53	12.70	381.00
26	660.40	7.92	12.70	9.53	12.70	406.40
28	711.20	7.92	12.70	9.53	12.70	438.15
30	762.00	7.92	12.70	9.53	12.70	469.90
32	812.80	7.92	12.70	9.53	12.70	501.65
34	863.60	7.92	12.70	9.53	12.70	533.40
36	914.40	7.92	12.70	9.53	12.70	565.15
38	965.20	7.92		9.53	12.70	599.95
40	1016.00	7.92		9.53	12.70	631.95
42	1066.80	7.92		9.53	12.70	660.40
44	1117.60	7.92		9.53	12.70	695.45
46	1168.40	7.92		9.53	12.70	726.95
48	1219.20	7.92		9.53	12.70	758.95

Weights (unit: kg)

Nominal Pipe Size	STD Sch. 5S	XS Sch. 10S	Sch. 40S	Sch. 80S
1/2	0.024	0.030	0.039	0.050
3/4	0.031	0.039	0.052	0.078
1	0.039	0.064	0.077	0.100
1 1/4	0.063	0.103	0.130	0.177
1 1/2	0.085	0.142	0.184	0.254
2	0.143	0.239	0.326	0.471
2 1/2	0.288	0.406	0.683	0.897
3	0.405	0.571	1.02	1.44
3 1/2	0.540	0.764	1.41	2.05
4	0.696	0.985	1.92	2.81
5	1.42	1.71	3.24	4.85
6	2.01	2.43	4.97	8.02
8	3.53	5.01	10.10	16.22
10	6.62	7.77	17.70	25.37
12	11.10	12.50	28.10	36.69
14	17.30	28.63	32.93	42.40
16	22.60	34.84	43.31	55.76
18	28.70	44.21	54.99	70.94
20	41.00	68.13	68.13	88.02
22	49.70	81.13	81.13	104.87
24	68.00	98.57	98.57	127.52
26	99.00	147.63	114.11	147.68
28	115.00	171.82	132.73	171.82
30	132.00	197.78	152.75	197.78
32	151.00	225.59	156.24	225.59
34	170.00	255.22	196.96	255.13
36	191.00	286.66	221.20	286.57
38	213.00		248.15	321.58
40	236.00		257.35	356.69
42	260.00		301.34	391.85
44	286.00		333.68	432.66
46	312.00		365.07	473.25
48	340.00		397.69	515.74

Note: Sch40S and 80S apply up to 12“ only

ASME/ASTM SA/A 403 WPS (Seamless) ANSI B-16-9
ASME/ASTM SA/A 403 WPW (Welded) ANSI B16-9
ASME/ASTM SA/A 403 WPWX (Welded/100% x Ray) ANSI B16-9



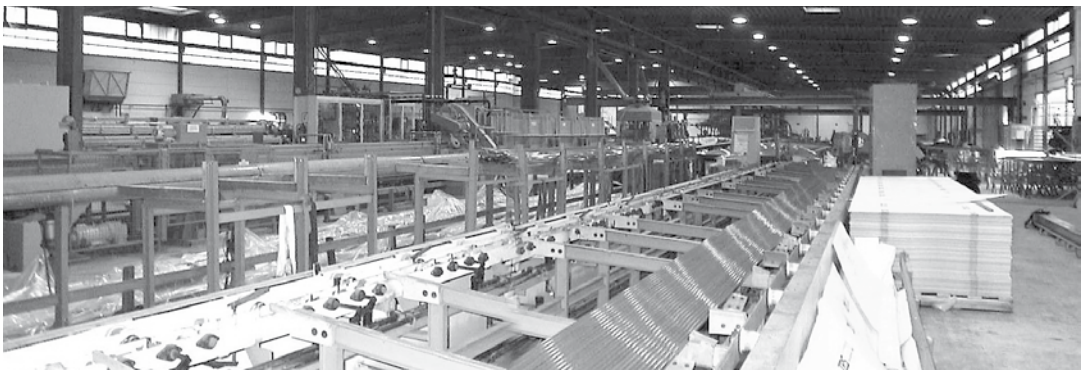
Dimensions (unit: mm)

Nominal Pipe Size	Outside Dia. (OD)	Wall Thickness (T) Sch. 5S	Sch. 10S	STD Sch. 40S	XS Sch. 80 S	Centre to End (A)
1	33,40	1,65	2,77	3,38	4,55	25,40
1 1/4	42,16	1,65	2,77	3,56	4,85	31,75
1 1/2	48,26	1,65	2,77	3,68	5,08	38,10
2	60,32	1,65	2,77	3,91	5,54	50,80
2 1/2	73,02	2,11	3,05	5,16	7,01	63,50
3	88,90	2,11	3,05	5,49	7,62	76,20
3 1/2	101,60	2,11	3,05	5,74	8,08	88,90
4	114,30	2,11	3,05	6,02	8,56	101,60
5	141,30	2,77	3,40	6,55	9,53	27,00
6	168,27	2,77	3,40	7,11	10,97	152,40
8	219,08	2,77	3,76	8,18	12,70	203,20
10	273,05	3,40	4,19	9,27	12,70	254,00
12	323,85	3,96	4,57	9,53	12,70	304,80
14	355,60	3,96	4,78	9,53	12,70	355,60
16	406,40	3,96	4,78	9,53	12,70	406,40
18	457,20	3,96	4,78	9,53	12,70	457,20
20	508,00	4,78	5,54	9,53	12,70	508,00
22	558,80	4,78	5,54	9,53	12,70	558,80
24	609,60	5,54	6,35	9,53	12,70	609,60

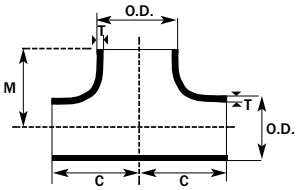
Weights (unit: kg)

Nominal Pipe Size	STD Sch. 5S	XS Sch. 10S	Sch. 40S	Sch. 80S
1	0,077	0,094	0,118	0,122
1 1/4	0,101	0,152	0,204	0,217
1 1/2	0,114	0,189	0,245	0,317
2	0,191	0,318	0,434	0,593
2 1/2	0,383	0,541	0,909	1,13
3	0,540	0,761	1,36	1,82
3 1/2	0,719	1,02	1,88	2,61
4	0,928	1,31	2,56	3,56
5	1,89	2,28	4,32	6,20
6	2,68	3,24	6,63	10,26
8	4,71	6,68	12,40	20,84
10	8,83	10,40	23,60	32,94
12	14,80	16,70	37,50	47,30
14	15,21	24,55	48,33	59,25
16	25,60	32,00	63,37	81,81
18	40,40	40,40	73,57	103,96
20	40,42	60,25	99,66	128,79
22	61,06	73,02	120,83	156,29
24	86,98	101,56	144,06	186,41

Note: Sch40S and 80S apply up to 12“ only



ASME/ASTM SA/A 403 WPS (Seamless) ANSI B-16-9
ASME/ASTM SA/A 403 WPW (Welded) ANSI B16-9
ASME/ASTM SA/A 403 WPWX (Welded/100% x Ray) ANSI B16-9



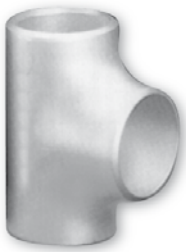
Dimensions (unit: mm)

Nominal Pipe Size	Outside Dia. (OD)	Wall Thickness (T) Sch. 5S	Sch. 10S	STD Sch. 40S	XS Sch. 80 S	Centre to End (A)
1/2	21,34	1,65	2,11	2,77	3,73	25,40
3/4	26,67	1,65	2,11	2,87	3,91	28,70
1	33,40	1,65	2,77	3,38	4,55	38,10
1 1/4	42,16	1,65	2,77	3,56	4,85	47,75
1 1/2	48,26	1,65	2,77	3,68	5,08	57,15
2	60,32	1,65	2,77	3,91	5,54	63,50
2 1/2	73,02	2,11	3,05	5,16	7,01	76,20
3	88,90	2,11	3,05	5,49	7,62	85,85
4	114,30	2,11	3,05	6,02	8,56	104,90
5	141,30	2,77	3,40	6,55	9,53	123,95
6	168,27	2,77	3,40	7,11	10,97	143,00
8	219,08	2,77	3,76	8,18	12,70	177,80
10	273,05	3,40	4,19	9,27	12,70	215,90
12	323,85	3,96	4,57	9,53	12,70	254,00
14	355,60	3,96	4,78	9,53	12,70	279,40
16	406,40	3,96	4,78	9,53	12,70	304,80
18	457,20	3,96	4,78	9,53	12,70	342,90
20	508,00	4,78	5,54	9,53	12,70	381,00
22	558,80	4,78	5,54	9,53	12,70	419,10
24	609,60	5,54	6,35	9,53	12,70	431,80

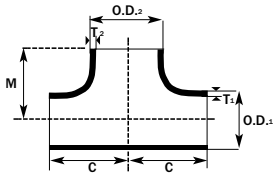
Weights (unit: kg)

Nominal Pipe Size	STD Sch. 5S	XS Sch. 10S	Sch. 40S	Sch. 80S
1/2	0,090	0,090	0,181	0,204
3/4	0,129	0,128	0,258	0,294
1	0,223	0,223	0,256	0,399
1 1/4	0,356	0,356	0,463	0,725
1 1/2	0,497	0,497	0,648	1,02
2	0,681	0,681	0,893	1,81
2 1/2	1,20	1,20	1,98	3,17
3	1,57	1,57	2,61	3,85
4	2,46	2,46	4,76	7,11
5	4,04	4,04	7,84	11,78
6	5,50	5,50	9,54	18,12
8	11,07	11,07	19,56	33,98
10	19,87	19,87	32,61	47,57
12	27,86	27,86	56,65	72,48
14	28,74	35,98	71,21	91,78
16	35,69	44,69	88,56	114,23
18	45,21	56,62	112,33	144,98
20	69,97	83,69	138,99	179,66
22	84,72	101,35	170,07	217,46
24	113,23	132,24	192,66	243,13

Note: Sch40S and 80S apply up to 12“ only



ASME/ASTM SA/A 403 WPS (Seamless) ANSI B-16-9
ASME/ASTM SA/A 403 WPW (Welded) ANSI B16-9
ASME/ASTM SA/A 403 WPWX (Welded/100% x Ray) ANSI B16-9



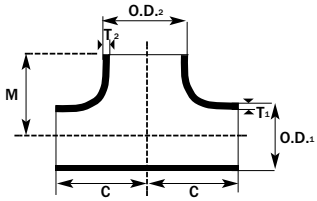
Dimensions (unit: mm)

Nominal Pipe Size Run	Outlet	Outside Dia. OD1	Outside Dia. OD2	Wall Thickness (T)								Center to End C	Center to End M
				Sch. 5S		Sch. 10S		STD Sch. 40S		XS Sch. 80 S			
				T1	T2	T1	T2	T1	T2	T1	T2		
3/4	1/2	26,67	21,34	1,65	1,65	2,11	2,11	2,87	2,77	3,91	3,73	28,70	28,70
1	1/2	33,40	21,34	1,65	1,65	2,77	2,11	3,38	2,77	4,55	3,73	38,10	38,10
1	3/4	33,40	26,67	1,65	1,65	2,77	2,11	3,38	2,87	4,55	3,91	38,10	38,10
1 1/4	3/4	42,16	26,67	1,65	1,65	2,77	2,11	9,56	2,87	4,85	3,91	47,75	47,75
1 1/4	1	42,16	33,40	1,65	1,65	2,77	2,77	3,56	3,38	4,85	4,55	47,75	47,75
1 1/2	1/2	48,26	21,34	1,65	1,65	2,77	2,11	3,68	2,77	5,08	3,73	57,15	57,15
1 1/2	3/4	48,26	26,67	1,65	1,65	2,77	2,11	3,68	2,87	5,08	3,91	57,15	57,15
1 1/2	1	48,26	33,40	1,65	1,65	2,77	2,77	3,68	3,38	5,08	4,55	57,15	57,15
1 1/2	1 1/4	48,26	42,16	1,65	1,65	2,77	2,77	3,68	3,56	5,08	4,85	57,15	57,15
2	3/4	60,32	26,67	1,65	1,65	2,77	0,84	3,91	2,87	5,54	3,91	63,50	44,45
2	1	60,32	33,40	1,65	1,65	2,77	2,77	3,91	3,38	5,54	4,55	63,50	50,80
2	1 1/4	60,32	42,16	1,65	1,65	2,77	2,77	3,91	3,56	5,54	4,85	63,50	57,15
2	1 1/2	60,32	48,26	1,65	1,65	2,77	2,77	3,91	3,68	5,54	5,08	63,50	60,45
2 1/2	1 1/2	73,02	48,26	2,11	1,65	3,05	2,77	5,16	3,68	7,01	5,08	76,20	66,80
2 1/2	2	73,02	60,32	2,11	1,65	3,05	2,77	5,16	3,91	7,01	5,54	76,20	69,85
3	1 1/2	88,90	48,26	2,11	1,65	3,05	2,77	5,49	3,68	7,62	5,08	79,50	73,15
3	2	88,90	60,32	2,11	1,65	3,05	2,77	5,49	3,91	7,62	5,54	85,85	76,20
3	2 1/2	88,90	73,02	2,11	2,11	3,05	3,05	5,49	5,16	7,62	7,01	85,85	82,55
4	1 1/2	114,30	48,26	2,11	1,65	3,05	2,77	6,02	3,68	8,56	5,08	104,90	85,85
4	2	114,30	60,32	2,11	1,65	3,05	2,77	6,02	3,91	8,56	5,54	104,90	88,90
4	2 1/2	114,30	73,02	2,11	2,11	3,05	3,05	6,02	5,16	8,56	7,01	104,90	95,25
4	3	114,30	88,90	2,11	2,11	3,05	3,05	6,02	5,49	8,56	7,62	104,90	98,55
5	3	141,30	88,90	2,77	2,11	3,40	3,05	6,55	5,49	9,53	7,62	123,95	111,25
5	4	141,30	114,30	2,77	2,11	3,40	3,05	6,55	6,02	9,53	8,56	123,95	117,60
6	2 1/2	168,27	73,02	2,77	2,11	3,40	3,05	7,11	5,16	10,97	7,01	143,00	120,65
6	3	168,27	88,90	2,77	2,11	3,40	3,05	7,11	5,49	10,97	7,62	143,00	123,95
6	4	168,27	114,30	2,77	2,11	3,40	3,05	7,11	6,02	10,97	8,56	143,00	130,30
6	5	168,27	141,30	2,77	2,77	3,40	9,40	7,11	6,55	10,97	9,53	143,00	136,65

Weights (unit: kg)

Nominal Pipe Size		Sch. 5S	Sch. 10S	STD Sch. 40S	XS Sch. 80S
Run	Outlet				
3/4	1/2	0,083	0,123	0,200	0,230
1	1/2	0,187	0,204	0,234	0,349
1	3/4	0,187	0,212	0,244	0,353
1 1/4	3/4	0,290	0,327	0,423	0,612
1 1/4	1	0,312	0,339	0,441	0,643
1 1/2	1/2	0,397	0,431	0,561	0,897
1 1/2	3/4	0,397	0,446	0,578	0,901
1 1/2	1	0,421	0,461	0,600	0,929
1 1/2	1 1/4	0,422	0,482	0,629	0,978
2	3/4	0,625	0,702	1,11	1,44
2	1	0,643	0,725	1,14	1,46
2	1 1/4	0,680	0,747	1,18	1,51
2	1 1/2	0,734	0,766	1,23	1,57
2 1/2	1 1/2	0,824	1,18	2,08	2,61
2 1/2	2	0,838	1,21	2,12	2,66
3	1 1/2	1,33	1,60	2,98	3,84
3	2	1,42	1,63	3,01	3,86
3	2 1/2	1,58	1,69	3,15	3,97
4	1 1/2	2,45	2,51	5,04	6,63
4	2	2,47	2,53	5,08	6,70
4	2 1/2	2,52	2,59	5,22	6,79
4	3	2,55	2,61	5,27	6,93
5	3	3,38	4,17	8,13	10,95
5	4	3,43	4,24	8,36	11,18
6	2 1/2	4,62	5,69	11,87	17,05
6	3	4,67	5,075	11,92	17,07
6	4	4,75	5,85	12,10	17,19
6	5	4,80	5,92	12,34	17,47

ASME/ASTM SA/A403 WPS (Seamless) ANSI B 16.9
ASME/ASTM SA/A403 WPW (Welded) ANSI B 16.9
ASME/ASTM SA/A403 WPWX (Welded/100% X Ray) ANSI B 16.9



Dimensions (unit: mm)

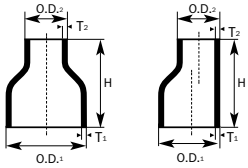
Nominal Pipe Size Run	Outlet	Outside Dia. OD_1	Outside Dia. OD_2	Wall Thickness (T) Sch. 5S T_1	Sch. 5S T_2	Sch. 10S T_1	Sch. 10S T_2	STD Sch. 40S T_1	STD Sch. 40S T_2	XS Sch. 80 S T_1	XS Sch. 80 S T_2	Center to End C	Center to End M
8	4	219.08	114.30	2.77	2.11	3.76	3.05	8.18	6.02	12.70	8.56	177.80	155.70
8	5	219.08	141.30	2.77	2.77	3.76	3.40	8.18	6.55	12.70	9.53	177.80	162.05
8	6	219.08	168.27	2.77	2.77	3.76	3.40	8.18	7.11	12.70	10.97	177.80	168.40
10	5	273.05	141.30	3.40	2.77	4.19	3.40	9.27	6.55	12.70	9.53	215.90	190.50
10	6	273.05	168.27	3.40	2.77	4.19	3.40	9.27	7.11	12.70	10.97	215.90	193.80
10	8	273.05	219.08	3.40	2.77	4.19	3.76	9.27	8.18	12.70	12.70	215.90	203.20
12	6	323.85	168.27	3.96	2.77	4.57	3.40	9.53	7.11	12.70	10.97	254.00	219.20
12	10	323.85	273.05	3.96	2.64	4.57	4.19	9.53	9.27	12.70	12.70	254.00	241.30
14	8	355.60	219.08	4.78	3.76	7.92	6.35	9.53	8.18	12.70	12.70	279.40	247.65
14	10	355.60	273.05	4.78	4.09	7.92	6.35	9.53	9.27	12.70	12.70	279.40	257.30
14	12	355.60	323.85	4.78	4.57	7.92	6.35	9.53	9.53	12.70	12.70	279.40	270.00
16	10	406.40	273.05	4.78	4.19	7.92	6.35	9.53	9.27	12.70	12.70	304.80	282.70
16	12	406.40	323.85	4.78	4.57	7.92	6.35	9.53	9.53	12.70	12.70	304.80	295.40
16	14	406.40	335.60	4.78	4.78	7.92	7.92	9.53	9.53	12.70	12.70	304.80	304.80
18	12	457.20	323.85	4.78	4.57	7.92	6.35	9.53	9.53	12.70	12.70	342.90	320.80
18	14	457.20	355.60	4.78	4.78	7.92	7.92	9.53	9.53	12.70	12.70	342.90	330.20
18	16	457.20	406.40	4.78	4.78	7.92	7.92	9.53	9.53	12.70	12.70	342.90	330.20
20	14	508.00	355.60	5.54	4.78	9.53	7.92	9.53	9.53	12.70	12.70	381.00	355.60
20	16	508.00	406.40	5.54	4.78	9.53	7.92	9.53	9.53	12.70	12.70	381.00	355.60
20	18	508.00	457.20	5.54	4.78	9.53	7.92	9.53	9.53	12.70	12.70	381.00	368.30
22	16	558.80	406.40	5.54	4.78	9.53	7.92	9.53	9.53	12.70	12.70	419.10	381.00
22	18	558.80	457.20	5.54	4.78	9.53	7.92	9.53	9.53	12.70	12.70	419.10	393.70
22	20	558.80	508.00	5.54	5.54	9.53	9.53	9.53	9.53	12.70	12.70	419.10	406.40
24	16	609.60	406.40	6.35	4.78	9.53	7.92	9.53	9.53	12.70	12.70	431.80	406.40
24	18	609.60	457.20	6.35	4.78	9.53	7.92	9.53	9.53	12.70	12.70	431.80	419.10
24	20	609.60	508.00	6.35	5.54	9.53	9.53	9.53	9.53	12.70	12.70	431.80	431.80
24	22	609.60	558.80	6.35	5.54	9.53	9.53	9.53	9.53	12.70	12.70	431.80	431.80

Weights (unit: kg)

Nominal Pipe Size Run	Outlet	Sch. 5S	Sch. 10S	STD Sch. 40S	XS Sch. 80S
8	4	7.35	9.80	21.26	30.76
8	5	7.41	9.83	21.36	30.85
8	6	7.44	9.90	21.62	31.25
10	5	13.43	16.47	36.14	47.47
10	6	13.49	16.58	36.27	47.95
10	8	13.54	16.69	36.85	48.39
12	6	22.93	25.10	51.96	67.43
12	10	23.13	25.48	53.72	68.81
14	8	28.79	52.00	57.88	75.22
14	10	28.96	52.37	58.34	75.89
14	12	29.14	52.73	58.81	76.57
16	10	34.26	61.89	68.88	89.51
16	12	34.47	62.32	69.43	90.32
16	14	34.67	62.76	69.98	91.12
18	12	43.37	78.33	87.17	113.28
18	14	43.62	78.88	87.87	114.30
18	16	43.89	79.43	88.57	115.33
20	14	64.47	107.63	107.63	139.86
20	16	64.85	108.38	108.38	141.12
20	18	65.24	109.24	109.14	142.39
22	16	78.00	130.23	130.23	169.22
22	18	78.47	131.14	131.14	170.74
22	20	78.94	132.06	132.06	172.88
24	16	96.84	138.24	138.24	179.64
24	18	97.69	139.21	139.21	181.25
24	20	98.00	140.18	140.18	182.89
24	22	98.59	141.16	141.16	184.53

Note: Sch 40S and 80S apply up to 12" only

ASME/ASTM SA/A403 WPS (Seamless) ANSI B 16.9
ASME/ASTM SA/A403 WPW (Welded) ANSI B 16.9
ASME/ASTM SA/A403 WPWX (Welded/100% X Ray) ANSI B 16.9



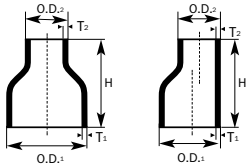
Dimensions (unit: mm)

Nominal Pipe Size		Out-side Dia. OD_1	Out-side Dia. OD_2	Wall Thickness (T)								Length
				Sch. 5S		Sch. 10S		STD Sch. 40S		XS Sch. 80 S		
				T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2	H
3/4	1/2	26.67	21.34	1.65	1.65	2.11	2.11	2.87	2.77	3.91	3.73	38.10
1	1/2	33.40	21.34	1.65	1.65	2.77	2.11	3.38	2.77	4.55	3.73	50.80
1	3/4	33.40	26.67	1.65	1.65	2.77	2.11	3.38	2.87	4.55	3.91	50.80
1 1/4	1	42.16	33.40	1.65	1.65	2.77	2.77	3.56	3.38	4.85	4.55	50.80
1 1/2	1/2	48.26	21.34	1.65	1.65	2.77	2.11	3.68	2.77	5.08	3.73	63.50
1 1/2	3/4	48.26	26.67	1.65	1.65	2.77	2.11	3.68	2.87	5.008	3.91	63.50
1 1/2	1	48.26	33.40	1.65	1.65	2.77	2.77	3.68	3.38	5.08	4.55	63.50
1 1/2	1 1/4	48.26	42.16	1.65	1.65	2.77	2.77	3.68	3.56	5.08	4.85	63.50
2	3/4	60.32	26.67	1.65	1.65	2.77	2.11	3.91	2.87	5.54	3.91	76.20
2	1	60.32	33.40	1.65	1.65	2.77	2.77	3.91	3.38	5.54	4.55	76.20
2	1 1/4	60.32	42.16	1.65	1.65	2.77	2.77	3.91	3.56	5.54	4.85	76.20
2	1 1/2	60.32	48.26	1.65	1.65	2.77	2.77	3.91	3.68	5.54	5.08	76.20
2 1/2	1	73.02	33.40	2.11	1.65	3.05	2.77	5.16	3.38	7.01	4.55	88.90
2 1/2	1 1/4	73.02	42.16	2.11	1.65	3.05	2.77	5.16	3.56	7.01	4.85	88.90
2 1/2	1 1/2	73.02	48.26	2.11	1.65	3.05	2.77	5.16	3.68	7.01	5.08	88.90
2 1/2	2	73.02	60.32	2.11	1.65	3.05	2.77	5.16	3.91	7.01	5.54	88.90
3	1	88.90	33.40	2.11	1.65	3.05	2.77	5.49	3.38	7.62	4.55	88.90
3	1 1/4	88.90	42.16	2.11	1.65	3.05	2.77	5.49	3.56	7.62	4.85	88.90
3	1 1/2	88.90	48.26	2.11	1.65	3.05	2.77	5.49	3.68	7.62	5.08	88.90
3	2	88.90	60.32	2.11	1.65	3.05	2.77	5.49	3.91	7.62	5.54	88.90
3	2 1/2	88.90	73.02	2.11	2.11	3.05	3.05	5.49	5.16	7.62	7.01	88.90
4	1 1/2	114.30	48.26	2.11	1.65	3.05	2.77	6.02	3.68	8.56	5.08	101.60
4	2	114.30	60.32	2.11	1.65	3.05	2.77	6.02	3.91	8.56	5.54	101.60
4	2 1/2	114.30	73.02	2.11	2.11	3.05	3.05	6.02	5.16	8.56	7.01	101.60
4	3	114.30	88.90	2.11	2.11	3.05	3.05	6.02	5.49	8.56	7.62	101.60
5	3	141.30	88.90	2.77	2.11	3.40	3.05	6.55	5.49	9.53	7.62	127.00
5	4	141.30	114.30	2.77	2.11	3.40	3.05	6.55	6.02	9.53	8.56	127.00
6	2 1/2	168.27	73.02	2.77	2.11	3.40	3.05	7.11	5.16	10.97	7.01	139.70
3	3	168.27	88.90	2.77	2.11	3.40	3.05	7.11	5.49	10.97	7.62	139.70
6	4	168.27	114.30	2.77	2.11	3.40	3.05	7.11	6.02	10.97	8.56	139.70
6	5	168.27	141.30	2.77	2.77	3.40	3.40	7.11	6.55	10.97	9.53	139.70
8	4	219.08	114.30	2.77	2.11	3.76	3.05	0.18	6.02	12.70	8.56	152.40
8	5	219.08	141.30	2.77	2.77	3.76	3.40	0.18	6.55	12.70	9.53	152.40
8	6	219.08	168.27	2.77	2.77	3.76	3.40	0.18	7.11	12.70	10.97	152.40
10	5	273.05	141.30	3.40	2.77	4.19	3.40	9.27	6.55	12.70	9.53	177.80
10	6	273.05	168.27	3.40	2.77	4.19	3.40	9.27	7.11	12.70	10.97	177.80
10	8	273.05	219.08	3.40	2.77	4.19	3.76	9.27	8.18	12.70	12.70	177.80
12	6	323.85	168.27	3.96	2.77	4.57	3.40	9.53	7.11	12.70	10.97	203.20
12	8	323.85	219.08	3.96	2.77	4.57	3.76	9.53	8.18	12.70	12.70	203.20
12	10	323.85	273.05	3.96	3.40	4.57	4.19	9.53	9.27	12.70	12.70	203.20

Weights (unit: kg)

Nominal Pipe Size		Sch. 5S	Sch. 10S	STD Sch. 40S	XS Sch. 80S
3/4	1/2	0.054	0.090	0.105	0.159
1	1/2	0.060	0.089	0.105	0.163
1	3/4	0.060	0.098	0.116	0.168
1 1/4	1	0.066	0.125	0.157	0.245
1 1/2	1/2	0.091	0.154	0.204	0.276
1 1/2	3/4	0.095	0.156	0.201	0.294
1 1/2	1	0.103	0.170	0.219	0.308
1 1/2	1 1/4	0.118	0.195	0.263	0.331
2	3/4	0.121	0.214	0.298	0.458
2	1	0.143	0.237	0.322	0.458
2	1 1/4	0.156	0.258	0.352	0.525
2	1 1/2	0.164	0.273	0.372	0.544
2 1/2	1	0.453	0.349	0.793	0.793
2 1/2	1 1/4	0.276	0.394	0.670	0.825
2 1/2	1 1/2	0.281	0.396	0.661	0.856
2 1/2	2	0.307	0.432	0.724	0.938
3	1	0.281	0.408	0.716	0.888
3	1 1/4	0.299	0.430	0.775	1.037
3	1 1/2	0.315	0.444	0.783	1.105
3	2	0.339	0.478	0.846	1.178
3	2 1/2	0.376	0.548	0.983	1.291
4	1 1/2	0.435	0.630	1.241	1.730
4	2	0.464	0.656	1.27	1.780
4	2 1/2	0.499	0.706	1.37	2.007
4	3	0.528	0.748	1.45	2.129
5	3	0.991	1.20	2.27	3.547
5	4	1.107	1.32	2.50	3.769
6	2 1/2	1.12	1.35	2.74	4.51
6	3	1.24	1.50	3.04	5.03
6	4	1.34	1.62	3.30	5.44
6	5	1.45	1.75	3.57	5.71
8	4	1.80	2.56	5.10	8.43
8	5	1.90	2.70	5.40	8.83
8	6	2.01	2.85	5.71	9.24
10	5	2.82	3.30	8.21	13.00
10	6	3.30	3.87	8.78	13.50
10	8	3.59	4.21	9.58	14.22
12	6	4.97	5.73	12.40	18.39
12	8	5.45	6.11	13.70	19.07
12	10	5.83	6.55	14.70	19.48

Note: Sch 40S and 80S apply up to 12“ only



ASME/ASTM SA/A403 WPS (Seamless) ANSI B 16.9
ASME/ASTM SA/A403 WPW (Welded) ANSI B 16.9
ASME/ASTM SA/A403 WPWX (Welded/100% X Ray) ANSI B 16.9

Dimensions (unit: mm)

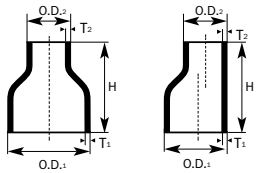
Nominal Pipe Size		Out-side Dia. OD_1	Out-side Dia. OD_2	Wall Thickness (T)								Length
				Sch. 10S		Sch. 20S		STD Sch. 40S		XS Sch. 80 S		
				T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2	H
14	12	355.60	323.85	4.78	4.57	7.92	6.35	9.53	9.53	12.70	12.70	330.20
14	10	355.60	273.05	4.78	4.19	7.92	6.35	9.53	9.27	12.70	12.70	330.20
14	8	355.60	219.08	4.78	3.76	7.92	6.35	9.53	8.18	12.70	12.70	330.20
14	6	355.60	168.27	4.78	3.40	7.92	-	9.53	7.11	12.70	10.97	330.20
16	14	406.40	355.60	4.78	4.78	7.92	7.92	9.53	9.53	12.70	12.70	355.60
16	12	406.40	323.85	4.78	4.57	7.92	6.35	9.53	9.53	12.70	12.70	355.60
16	10	406.40	273.05	4.78	4.19	7.92	6.35	9.53	9.27	12.70	12.70	355.60
16	8	406.40	219.08	4.78	3.76	7.92	6.35	9.53	8.18	12.70	12.70	355.60
18	16	457.20	406.40	4.78	4.78	7.92	7.92	9.53	9.53	12.70	12.70	381.00
18	14	457.20	355.60	4.78	4.78	7.92	7.92	9.53	9.53	12.70	12.70	381.00
18	12	457.20	323.85	4.78	4.57	7.92	6.35	9.53	9.53	12.70	12.70	381.00
18	10	457.20	273.05	4.78	4.19	7.92	6.35	9.53	9.27	12.70	12.70	381.00
20	18	508.00	457.20	5.54	4.78	9.53	7.92	9.53	9.53	12.70	12.70	508.00
20	16	508.00	406.40	5.54	4.78	9.53	7.92	9.53	9.53	12.70	12.70	508.00
20	14	508.00	355.60	5.54	4.78	9.53	7.92	9.53	12.70	12.70	12.70	508.00
20	12	508.00	323.85	5.54	4.57	9.53	6.35	9.53	9.53	12.70	12.70	508.00
22	20	558.80	508.00	5.54	5.54	9.53	9.53	9.53	9.53	12.70	12.70	508.00
20	18	558.80	457.20	5.54	4.78	9.53	7.92	9.53	9.53	12.70	12.70	508.00
22	16	558.80	406.40	5.54	4.78	9.53	7.92	9.53	9.53	12.70	12.70	508.00
22	14	558.80	355.60	5.54	4.78	9.53	7.92	9.53	9.53	12.70	12.70	508.00
24	22	609.60	558.80	6.35	5.54	9.53	9.53	9.53	9.53	12.70	12.70	508.00
24	20	609.60	508.00	6.35	5.54	9.53	9.53	9.53	9.53	12.70	12.70	508.00
24	18	609.60	457.20	6.35	4.78	9.53	7.92	9.53	9.53	12.70	12.70	508.00
24	16	609.60	406.40	6.35	4.78	9.53	7.92	9.53	9.53	12.70	12.70	508.00
24	14	609.60	355.60	6.35	4.78	9.53	7.92	9.53	9.53	12.70	12.70	508.00
26	24	660.40	609.60			12.70	9.53	9.53	9.53	12.70	12.70	609.60
26	20	660.40	508.00			12.70	9.53	9.53	9.53	12.70	12.70	609.60
26	18	660.40	457.20			12.70	7.92	9.53	9.53	12.70	12.70	609.60
26	16	660.40	406.40			12.70	7.92	9.53	9.53	12.70	12.70	609.60
28	26	711.20	660.40			12.70	12.70	9.53	9.53	12.70	12.70	609.60
28	24	711.20	609.60			12.70	9.53	9.53	9.53	12.70	12.70	609.60
28	20	711.20	508.00			12.70	9.53	9.53	9.53	12.70	12.70	609.60
28	18	711.20	457.20			12.70	7.92	9.53	9.53	12.70	12.70	609.60
30	28	762.00	711.20			12.70	12.70	9.53	9.53	12.70	12.70	609.60
30	26	762.00	660.40			12.70	12.70	9.53	9.53	12.70	12.70	609.60
30	24	762.00	609.60			12.70	9.53	9.53	9.53	12.70	12.70	609.60
30	20	762.00	508.00			12.70	9.53	9.53	9.53	12.70	12.70	609.60
32	30	812.80	762.00			12.70	12.70	9.53	9.53	12.70	12.70	609.60
32	28	812.80	711.20			12.70	12.70	9.53	9.53	12.70	12.70	609.60

Weights (unit: kg)

Nominal Pipe Size		Sch. 10S	Sch. 20S	STD Sch. 40S	XS Sch. 80S
14	12	14.27	25.65	28.55	37.18
14	10	13.21	23.73	26.41	34.40
14	8	12.07	21.70	24.15	31.44
14	6	11.01	19.78	22.01	28.66
16	14	17.24	30.98	34.48	44.90
16	12	16.52	29.69	33.05	43.03
16	10	15.37	27.62	30.75	40.04
16	8	14.15	25.43	28.30	36.86
18	16	20.94	37.62	41.87	54.52
18	14	19.71	35.41	39.41	51.32
18	12	18.94	34.02	37.87	49.32
18	10	17.70	31.81	35.41	46.11
20	18	38.01	62.40	62.40	81.25
20	16	36.01	59.11	59.11	76.97
20	14	33.98	55.83	55.83	72.70
20	12	32.76	53.78	53.78	70.02
22	20	42.01	68.96	68.96	89.80
22	15	40.01	65.68	65.68	85.53
22	16	38.01	62.40	62.40	81.25
22	14	36.01	59.08	59.08	76.97
24	22	52.91	75.53	75.53	98.36
24	20	50.61	72.25	72.25	94.08
24	18	48.31	68.96	68.96	89.80
24	16	46.01	65.68	65.68	85.53
24	14	43.71	62.40	62.40	81.25
26	24		128.28	98.53	128.03
26	20		118.02	90.65	117.79
26	18		112.88	86.70	112.66
26	16		107.76	82.76	107.54
28	26		138.54	106.41	138.27
28	24		133.41	102.47	133.15
28	20		123.15	94.59	122.91
28	18		118.02	90.65	117.78
30	28		148.80	114.29	148.51
30	26		143.67	110.35	143.39
30	24		138.54	106.41	138.27
30	20		128.28	98.53	128.03
32	30		159.07	122.17	158.75
32	28		153.93	118.23	153.63

Note: Sch 40S and 80S apply up to 12" only

ASME/ASTM SA/A403 WPS (Seamless) ANSI B 16.9
ASME/ASTM SA/A403 WPW (Welded) ANSI B 16.9
ASME/ASTM SA/A403 WPWX (Welded/100% X Ray) ANSI B 16.9



Dimensions (unit: mm)

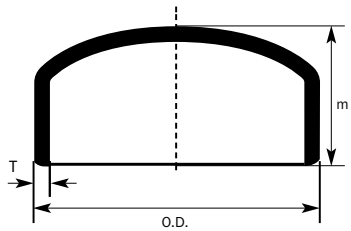
Nominal Pipe Size		Out-side Dia. OD_1	Out-side Dia. OD_2	Wall Thickness (T)								Length
				Sch. 10S		Sch. 20S		STD Sch. 40S		XS Sch. 80 S		
				T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2	H
32	26	812.80	660.40			12.70	12.70	9.53	9.53	12.70	12.70	609.60
32	24	812.80	609.60			12.70	9.53	9.53	9.53	12.70	12.70	609.60
34	32	863.60	812.80			12.70	12.70	9.53	9.53	12.70	12.70	609.60
34	30	863.60	762.00			12.70	12.70	9.53	9.53	12.70	12.70	609.60
34	28	863.60	711.20			12.70	12.70	9.53	9.53	12.70	12.70	609.60
34	26	863.60	660.40			12.70	12.70	9.53	9.53	12.70	12.70	609.60
36	34	914.40	863.60			12.70	12.70	9.53	9.53	12.70	12.70	609.60
36	32	914.40	812.80			12.70	12.70	9.53	9.53	12.70	12.70	609.60
36	30	914.40	762.00			12.70	12.70	9.53	9.53	12.70	12.70	609.60
36	28	914.40	711.20			12.70	12.70	9.53	9.53	12.70	12.70	609.60
38	36	965.20	914.40					9.53	9.53	12.70	12.70	609.60
38	34	965.20	863.60					9.53	9.53	12.70	12.70	609.60
38	32	965.20	812.80					9.53	9.53	12.70	12.70	609.60
38	30	965.20	762.00					9.53	9.53	12.70	12.70	609.60
38	28	965.20	711.20					9.53	9.53	12.70	12.70	609.60
38	26	965.20	660.40					9.53	9.53	12.70	12.70	609.60
40	38	1016.00	965.20					9.53	9.53	12.70	12.70	609.60
40	36	1016.00	914.40					9.53	9.53	12.70	12.70	609.60
40	34	1016.00	863.60					9.53	9.53	12.70	12.70	609.60
40	32	1016.00	812.80					9.53	9.53	12.70	12.70	609.60
40	30	1016.00	762.00					9.53	9.53	12.70	12.70	609.60
42	40	1066.80	1016.00					9.53	9.53	12.70	12.70	609.60
42	38	1066.80	965.20					9.53	9.53	12.70	12.70	609.60
42	36	1066.80	914.40					9.53	9.53	12.70	12.70	609.60
42	34	1066.80	863.60					9.53	9.53	12.70	12.70	609.60
42	32	1066.80	812.80					9.53	9.53	12.70	12.70	609.60
42	30	1066.80	762.00					9.53	9.53	12.70	12.70	609.60
44	42	1117.60	1066.80					9.53	9.53	12.70	12.70	609.60
44	40	1117.60	1016.00					9.53	9.53	12.70	12.70	609.60
44	38	1117.60	965.20					9.53	9.53	12.70	12.70	609.60
44	36	1117.60	914.40					9.53	9.53	12.70	12.70	609.60
46	44	1168.40	1117.60					9.53	9.53	12.70	12.70	711.20
46	42	1168.40	1066.80					9.53	9.53	12.70	12.70	711.20
46	40	1168.40	1016.00					9.53	9.53	12.70	12.70	711.20
46	38	1168.40	965.20					9.53	9.53	12.70	12.70	711.20
46	36	1168.40	914.40					9.53	9.53	12.70	12.70	711.20
48	44	1219.20	1117.60					9.53	9.53	12.70	12.70	711.20
48	42	1219.20	1066.80					9.53	9.53	12.70	12.70	711.20
48	40	1219.20	1016.00					9.53	9.53	12.70	12.70	711.20

Weights (unit: kg)

Nominal Pipe Size		Sch. 10S	Sch. 20S	STD Sch. 40S	XS Sch. 80S
32	26		148.80	114.29	148.51
32	24		143.67	110.40	143.39
34	32		169.33	130.06	168.99
34	30		164.20	126.12	163.88
34	28		159.07	122.17	158.75
34	26		153.93	118.51	153.63
36	34		179.59	137.94	179.24
36	32		174.46	133.99	174.12
36	30		169.33	130.06	168.99
36	28		164.20	126.12	163.88
38	36			145.82	189.48
38	34			141.88	184.36
38	32			137.94	179.24
38	30			133.99	174.12
38	28			130.06	168.99
38	26			126.12	163.88
40	38			153.70	199.72
40	36			149.76	194.60
40	34			145.82	189.46
40	32			141.88	184.36
40	30			137.94	179.24
42	40			161.59	209.97
42	38			157.64	204.85
42	36			153.70	199.72
42	34			149.76	194.60
42	32			145.82	189.48
42	30			141.88	184.36
44	42			169.47	220.21
44	40			165.53	215.09
44	38			161.59	209.97
44	36			157.64	204.85
46	44			177.35	230.45
46	42			173.41	225.33
46	40			169.47	220.21
46	38			165.53	215.09
46	36			165.53	215.09
48	44			181.29	235.57
48	42			177.35	230.45
48	40			173.41	225.33

Note: Sch 40S and 80S apply up to 12“ only

ASME/ASTM SA/A403 WPS (Seamless) ANSI B 16-9.



Dimensions (unit: mm)

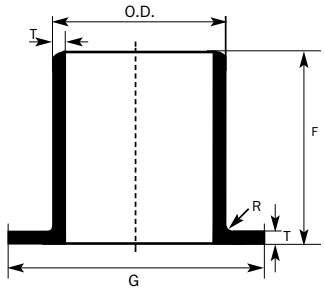
Nominal Pipe Size	Outside Dia. (OD)	Wall Thickness (T) Sch. 5S	Sch. 10S	STD Sch. 40S	XS Sch. 80 S	Centre to End E
1/2	21.34	1.65	2.11	2.77	3.73	25.40
3/4	26.67	1.65	2.11	2.87	3.91	25.40
1	33.40	1.65	2.77	3.38	4.55	38.10
1 1/4	42.16	1.65	2.77	3.56	4.85	38.10
1 1/2	48.26	1.65	2.77	3.68	5.08	38.10
2	60.32	1.65	2.77	3.91	5.54	38.10
2 1/2	73.02	2.11	3.05	5.16	7.01	50.80
3	88.90	2.11	3.05	5.49	7.62	63.50
4	114.30	2.11	3.05	6.02	8.56	76.20
5	141.30	2.77	3.40	6.55	9.53	88.90
6	168.27	2.77	3.40	7.11	10.97	101.60
8	219.08	2.77	3.76	8.18	12.70	127.00
10	273.00	3.40	4.19	9.53	12.70	152.40
12	323.85	3.96	4.57	9.53	12.70	177.80
14	355.60		4.78	9.53	12.70	190.50
16	406.40		4.78	9.53	12.70	203.20
18	457.20		4.78	9.53	12.70	228.60
20	508.00		5.54	9.53	12.70	254.00
24	609.60		6.35	9.53	12.70	304.80

Weights (unit: kg)

Nominal Pipe Size	Sch. 5S	Sch. 10S	STD Sch. 40S	XS Sch. 80S
1/2	0.036	0.040	0.046	0.045
3/4	0.049	0.052	0.059	0.086
1	0.053	0.090	0.109	0.109
1 1/4	0.066	0.113	0.145	0.159
1 1/2	0.076	0.130	0.171	0.222
2	0.099	0.168	0.234	0.344
2 1/2	0.169	0.242	0.420	0.512
3	0.253	0.362	0.664	0.888
4	0.409	0.585	1.17	1.51
5	0.805	0.978	1.90	2.89
6	1.11	1.35	2.83	4.24
8	1.74	2.49	5.11	7.76
10	3.26	3.84	8.92	13.11
12	5.47	6.15	14.10	17.94
14	7.19	7.85	16.35	21.11
16	10.99	9.56	18.60	25.73
18	13.92	12.10	23.54	32.57
20	17.19	17.90	29.06	40.21
24	27.43	30.15	41.85	57.86

Note: Sch 40S and 80S apply up to 12" only

ASME/ASTM SA/A403 WPS (Seamless) ANSI B 16-9
ASME/ASTM SA/A403 WPW (Welded) ANSI B 16-9
ASME/ASTM SA/A403 WPWX (Welded/100% X Ray) ANSI B 16-9



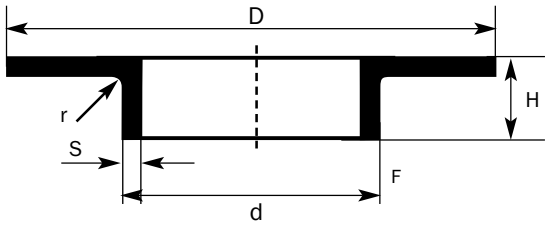
Dimensions (unit: mm)

Nominal Pipe Size	Out-side Dia.	Wall Thickness (T)				Dia. of Lap	Length F		Radius R	
				STD	XS				Type A	Type B
	(OD)	Sch. 5S	Sch. 10S	Sch. 40S	Sch. 80 S	(G)	ANSI	MSS	(Max)	(Max)
1/2	21.34	1.65	2.11	2.77	3.73	34.93	76.20	50.80	3.30	0.76
3/4	26.67	1.65	2.11	2.87	3.91	42.88	76.20	50.80	3.30	0.76
1	33.40	1.65	2.77	3.38	4.55	50.80	101.60	50.80	3.30	0.76
1 1/4	42.16	1.65	2.77	3.56	4.85	63.50	101.60	50.80	4.83	0.76
1 1/2	48.26	1.65	2.77	3.68	5.08	73.02	101.60	50.80	6.35	0.76
2	60.32	1.65	2.77	3.91	5.54	92.07	152.40	63.50	7.87	0.76
2 1/2	73.02	2.11	3.05	5.16	7.01	104.77	152.40	63.50	7.87	0.76
3	88.90	2.11	3.05	5.49	7.62	127.00	152.40	63.50	9.65	0.76
4	114.30	2.11	3.05	6.02	8.56	157.18	152.40	76.20	11.18	0.76
5	141.30	2.77	3.40	6.55	9.53	185.75	203.20	76.20	11.18	1.52
6	168.27	2.77	3.40	7.11	10.97	215.90	203.20	88.90	12.70	1.52
8	219.08	2.77	3.76	8.18	12.70	269.88	203.20	101.60	12.70	1.52
10	273.05	3.40	4.19	9.27	12.70	323.85	254.00	127.00	12.70	1.52
12	323.85	3.96	4.57	9.53	12.70	381.00	254.00	152.40	12.70	1.52
14	355.60	3.96	4.78	9.53	12.70	412.75	304.80	152.40	12.70	1.52
16	406.40	4.19	4.78	9.53	12.70	469.90	304.80	152.40	12.70	1.52
18	457.20	4.19	4.78	9.53	12.70	533.40	304.80	152.40	12.70	1.52
20	508.00	4.78	5.54	9.53	12.70	584.20	304.80	152.40	12.70	1.52
22	558.80	4.78	5.54	9.53	12.70	641.35	304.80	-	12.70	1.52
24	609.60	5.54	6.35	9.53	12.70	692.15	304.80	152.40	12.70	1.52

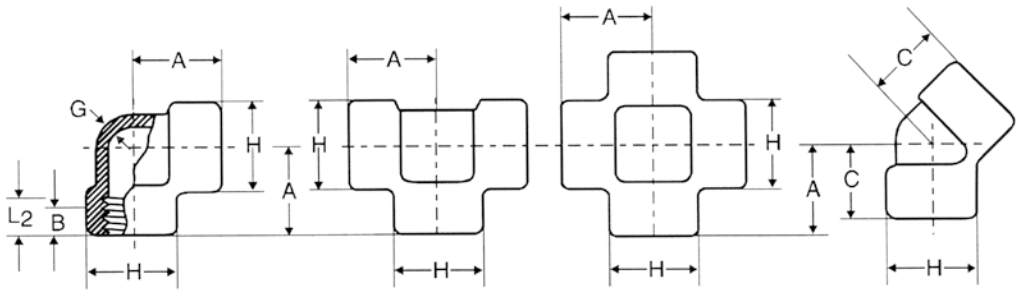
Weights (unit: kg)

Nominal Pipe Size	F			STD	XS
		Sch. 5S	Sch. 10S	Sch. 40S	Sch. 80S
1/2	MSS	0.059	0.077	0.118	0.127
3/4	MSS	0.068	0.086	0.154	0.168
1	MSS	0.091	0.140	0.186	0.240
1 1/4	MSS	0.131	0.208	0.263	0.349
1 1/2	MSS	0.159	0.249	0.376	0.458
2	MSS	0.245	0.376	0.539	0.743
2 1/2	MSS	0.349	0.471	0.797	1.060
3	MSS	0.467	0.638	1.133	1.508
4	MSS	0.711	0.978	1.812	2.523
5	MSS	1.046	1.237	2.537	3.601
6	MSS	1.62	1.95	3.72	5.57
8	MSS	2.45	3.10	5.89	10.12
10	MSS	4.04	4.86	10.42	13.95
12	MSS	6.60	7.11	14.95	19.93
14	MSS	6.43	7.75	15.46	20.62
16	MSS	7.91	9.02	17.98	23.98
18	MSS	9.24	10.53	21.00	28.00
20	MSS	11.68	13.54	23.30	31.07
22	MSS				
24	MSS	16.52	18.94	28.41	37.88

Note: Sch 40S and 80S apply up to 12“ only

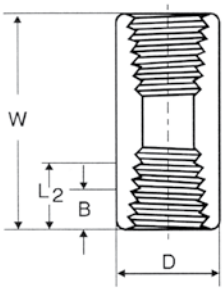


Nominal diameter	Diameter in inches	d	D	r	H	s
10	3/8“	17.2	40	3	9	As per ANSI B36-10/B36-19 or customer specification
15	1/2“	21.3	45	3	9	
20	1/2“	26.9	58	3	12	
25	1“	33.7	68	4	15	
32	1 1/4“	42.4	78	4	15	
40	1 1/2“	48.3	88	4	17	
50	2“	60.3	102	5	23	
65	2 1/2“	73	122	5	23	
80	3“	88.9	138	5	23	
100	4“	114.3	158	5	28	
125	5“	141.3	188	5	30	
150	6“	168.3	212	5	30	
200	8“	219.1	268	5	30	
250	10“	273.2	320	5	30	
300	12“	323.9	370	6	35	
350	14“	355.6	430	6	-	
400	16“	406.4	482	6	-	
450	18“	457.2	532	6	-	
500	20“	508	585	6	-	
600	24“	609.6	685	7	-	
700	28“	711.2	800	7	-	
800	32“	812.8	905	7	-	
900	36“	914.4	1005	7	-	
1000	40“	1016	1110	8	-	
1200	48“	1219.2	1330	8	-	

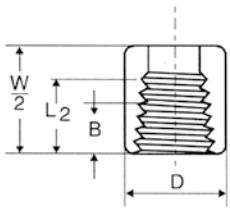


DN	Nom. Pipe Size	Centre to End Elbows, Tees, Cross A			Centre to End 45° Elbow C			Outside Diameter of Band H			Minimum Wall Thickness G			Length of Thread Min.(1)	
		2000	3000	6000	2000	3000	6000	2000	3000	6000	2000	3000	6000	B	L2
6	1/8	21	21	25	17	17	19	22	22	25	3.18	3.18	6.35	6.4	6.7
8	1/4	21	25	28	17	19	22	22	25	33	3.18	3.30	6.60	8.1	10.2
10	3/8	25	28	33	19	22	25	25	33	38	3.18	3.51	6.98	9.1	10.4
15	1/2	28	33	38	22	25	28	33	38	46	3.18	4.09	8.15	10.9	13.6
20	3/4	33	38	44	25	28	33	38	46	56	3.18	4.32	8.53	12.7	13.9
25	1	38	44	51	28	33	35	46	56	62	3.68	4.98	9.93	14.7	17.3
32	1-1/4	44	51	60	33	35	43	56	62	75	3.89	5.28	10.59	17.0	18.0
40	1-1/2	51	60	64	35	43	44	62	75	84	4.01	5.56	11.07	17.8	18.4
50	2	60	64	83	43	44	52	75	84	102	4.27	7.14	12.09	19.0	19.2
65	2-1/2	76	83	95	52	52	64	92	102	121	5.61	7.65	15.29	23.6	28.9
80	3	86	95	106	64	64	79	109	121	146	5.99	8.84	16.64	25.9	30.5
100	4	106	114	114	79	79	79	146	152	152	6.55	11.18	18.67	27.7	33.0

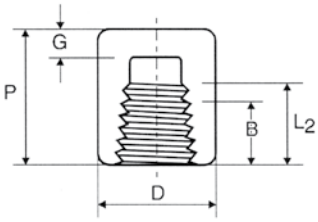
1. Dimension B is minimum length of perfect thread. The length of useful thread (B plus threads with fully normed roots and flat crests) shall not be less than L2 (effective length of external thread) required by American National Standard for Pipe Threads (ANSI/ASME B1.20.1).



COUPLING



HALF COUPLING



CAP

Dimensions in mm

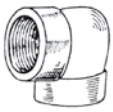
DN	Nom. Pipe Size	End to End Couplings W	End to End Couplings P		Outside Diameter D		End Wall Thickness G	Min.	Length of Thread Min.(1)	
		3000&6000	3000	6000	3000	6000	3000	6000	B	L2
6	1/8	32	19	...	16	22	4.8	...	6.4	6.7
8	1/4	35	25	27	19	25	4.8	6.4	8.1	10.2
10	3/8	38	25	27	22	32	4.8	6.4	9.1	10.4
15	1/2	48	32	33	28	38	6.4	7.9	10.9	13.6
20	3/4	51	37	38	35	44	6.4	7.9	12.7	13.9
25	1	60	41	43	44	57	9.7	11.2	14.7	17.3
32	1-1/4	67	44	46	57	64	9.7	11.2	17.0	18.0
40	1-1/2	79	44	48	64	76	11.2	12.7	17.8	18.4
50	2	86	48	51	76	92	12.7	15.7	19.0	19.2
65	2-1/2	92	60	64	92	108	15.7	19.0	23.6	28.9
80	3	108	65	68	108	127	19.0	22.4	25.9	30.5
100	4	121	68	75	140	159	22.4	28.4	27.7	33.0

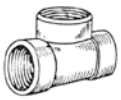
1. Dimension B is minimum length of perfect thread. The length of useful thread (B plus threads with fully normed roots and flat crests) shall not be less than L2 (effective length of external thread) required by American National Standard for Pipe Threads (ANSI/ASME B1.20.1).

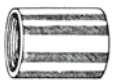
2. Class 2000 and NPS 1/8 (DN6) class 6000 couplings, half couplings, and caps are not included in this standard.

Pressure Ratings: 2000 lbs/sq. in. (sched. 40) = ~140 kp/cm3
3000 lbs/sq.in. (sched. 80) = ~ 210 kp/cm3
6000 lbs/sq.in. (sched. 160) = ~ 420 kp/cm3

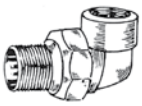
NPT-Threaded as per MSS SP 49/50 with thread to ANSI-B 2.1


90° Elbow

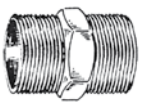

Tee and Reducing Tee


Coupling and Reducing Coupling

Cap


Threaded End 90° Union Tee

Threaded End Union Tee


Hex, Nipple and Reducing Nipple

Square Head Plug

Round Head Plug

(Swage) Reducing Nipple

45° Elbow

Cross

Half Coupling

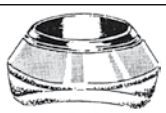
Street Elbow

Bushing

Hex, Head Plug

Union

Threadolet


Weldolet

Socket-Weld as per ANSI-B 16.11

90° Elbow

45° Elbow

Tee and Reducing Tee

Cross

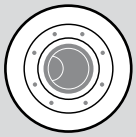
Coupling and Reducing Coupling

Half Coupling

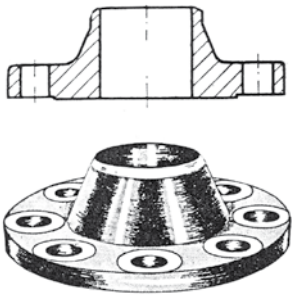
Cap

Union with inserted or integral Seat

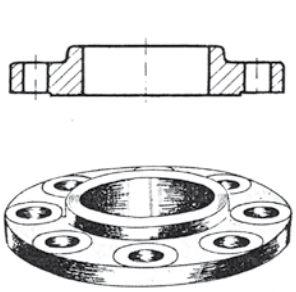
Sockolet



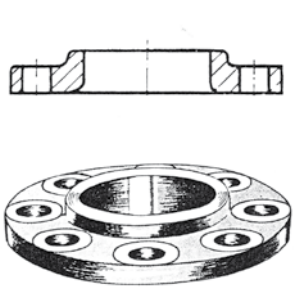
Welding Neck



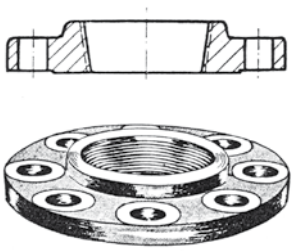
Slip-on



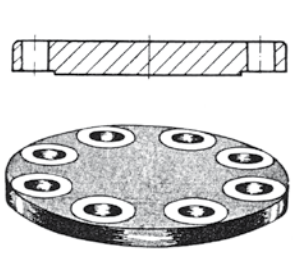
Lap Joint



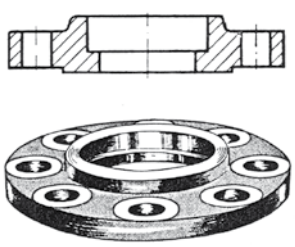
Threaded



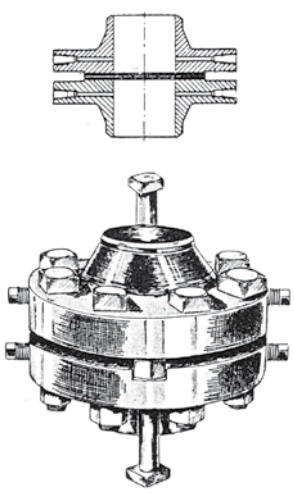
Blind



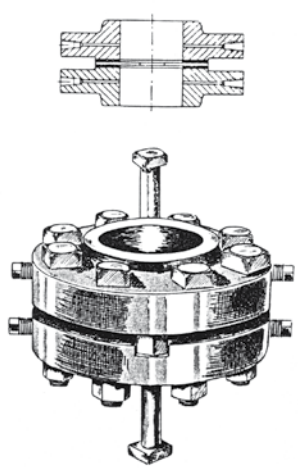
Socket Welding



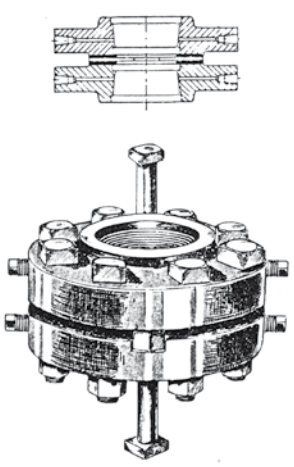
Welding Neck Orifice
(raised face)

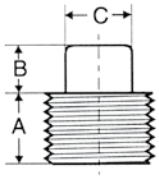


Slip-on Orifice
(raised face)

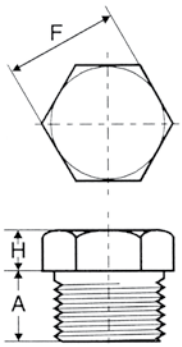


Threaded Orifice
(raised face)

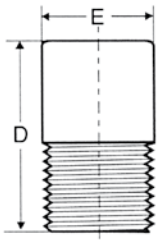




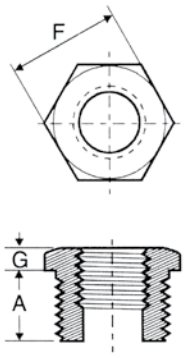
SQUARE HEAD PLUG



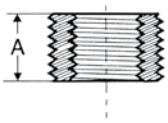
HEX HEAD PLUG



ROUND HEAD PLUG



HEX HEAD(1) BUSHING



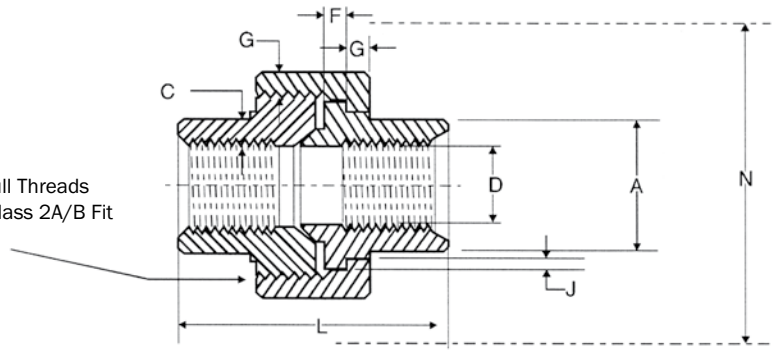
FLUSH BUSHING

Dimensions in mm

DN	Nom. Pipe Size	Length (Min.)	Plugs Square Head		Plugs Square Head		Hex Plugs & Bushings		
			Height of Square (Min.)	Width Flats (Min.)	Nominal Diameter of Head	Length (Min.)	Width Flats (Nom.)	Hex Height (Min.)	
								Bushing	Plug
		A	B	C	E	D	F	G	H
6	1/8	10	6	7	10	35	11	...	6
8	1/4	11	6	10	14	41	16	3	6
10	3/8	13	8	11	18	41	18	4	8
15	1/2	14	10	14	21	44	22	5	8
20	3/4	16	11	16	27	44	27	6	10
25	1	19	13	21	33	51	36	6	10
32	1-1/4	21	14	24	43	51	46	7	14
40	1-1/2	21	16	28	48	51	50	8	16
50	2	22	18	32	60	64	65	9	18
65	2-1/2	27	19	36	73	70	75	10	19
80	3	28	21	41	89	70	90	10	21
100	4	32	25	65	114	76	115	13	25

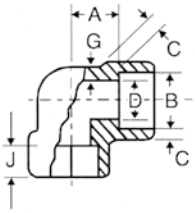
1. CAUTIONARY NOTE REGARDING HEX BRUSHINGS. Hex Head Brushings of one-size reduction should not be used in services wherein they might be subject to harmful loads and forces other than external pressures.

H-Threads
Minimum 4 Full Threads
EngagementClass 2A/B Fit

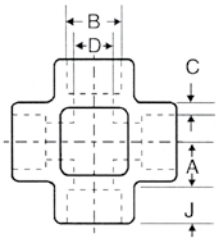


Dimensions in mm

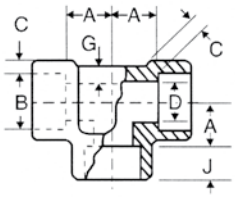
Nom. Pipe Size	Pipe End Min. A	Wall Min. C	Water Way Bore D	Male Flange Min. F	Nut Min. G	Theads Per 25.4 mm Max. H	Bearing Min. J	Length Assem. Nom. L	Clear Assem. Nut N
1/8	14.7	2.41	6.83 6.43	3.17	3.2	16	1.24	41.4	49.0
1/4	19.0	3.02	9.85 9.45	3.17	3.2	16	1.24	41.4	49.0
3/8	22.9	3.20	13.92 13.51	3.43	3.4	14	1.37	46.0	55.0
1/2	27.7	3.73	17.47 17.07	3.68	3.7	14	1.50	49.0	57.0
3/4	33.5	3.91	21.79 21.39	4.06	4.1	11	1.68	56.9	67.0
1	41.4	4.55	28.14 27.74	4.57	4.4	11	1.85	62.0	79.0
1-1/4	50.5	4.85	35.76 35.36	5.33	5.2	11	2.13	71.1	94.0
1-1/2	57.2	5.08	41.61 41.20	5.84	5.6	10	2.31	76.4	111.0
	70.1	5.54	52.53 52.12	6.60	6.4	10	2.69	86.1	132.0
2-1/2	85.3	7.01	64.72 64.31	7.49	7.1	8	3.07	102.4	148.0
3	102.4	7.62	77.67 77.27	8.25	8.0	8	3.53	109.0	175.0



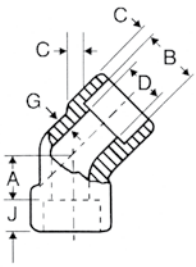
90° ELBOW



CROSS



TEE

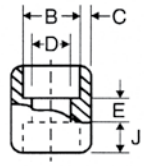


45° ELBOW

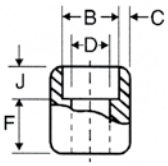
Dimensions in mm

DN	Nom. Pipe Size	Socket Bore Dia. (2) B	Bore Diameter of Fitting (2) D			Socket Wall Thickness (1) C						Body Wall Thickness G			Depth of Socket Min. J
			Class Designation			3000		6000		9000		Class Designation			
			3000	6000	9000	Ave.	Min.	Ave.	Min.	Ave.	Min.	3000 Min.	6000 Min.	9000 Min.	
6	1/8	11.2	7.6	4.8		3.18	3.18	3.96	3.43			2.41	3.15		9.5
		10.8	6.1	3.2											
8	1/4	14.6	10.0	7.1		3.78	3.30	4.60	4.01			3.02	3.68		9.5
		14.2	8.5	5.6											
10	3/8	18.0	13.3	9.9		4.01	3.50	5.03	4.37			3.20	4.01		9.5
		17.6	11.8	8.4											
15	1/2	22.2	16.6	12.5	7.2	4.67	4.09	5.97	5.18	9.35	8.18	3.73	4.78	7.47	9.5
		21.8	15.0	11.0	5.6										
20	3/4	27.6	21.7	16.3	11.8	4.90	4.27	6.96	6.04	9.78	8.56	3.91	5.56	7.82	12.5
		27.2	20.2	14.8	10.3										
25	1	34.3	27.4	21.5	16.0	5.69	4.98	7.92	6.93	11.38	9.96	4.55	6.35	9.09	12.5
		33.9	25.9	19.9	14.5										
32	1-1/4	43.1	35.8	30.2	23.5	6.07	5.28	7.92	6.93	12.14	10.62	4.85	6.35	9.70	12.5
		42.7	34.3	28.7	22.0										
40	1-1/2	49.2	41.6	34.7	28.7	6.35	5.54	8.92	7.80	12.7	11.12	5.08	7.14	10.15	12.5
		48.8	40.1	33.2	27.2										
50	2	61.7	53.3	43.6	38.9	6.93	6.04	10.92	9.50	13.84	12.12	5.54	8.74	11.07	16.0
		61.2	51.7	42.1	37.4										
65	2-1/2	74.4	64.2			8.76	7.67					7.01			16.0
		73.9	61.2												
80	3	90.3	79.4			9.52	8.30					7.62			16.0
		89.8	76.4												
100	4	115.7	103.8			10.69	9.35					8.56			19.0
		115.2	100.7												

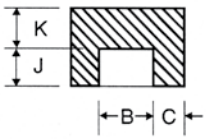
Notes:
1. Average of Socket Wall Thickness around periphery shall be no less than listed values. The minimum values are permitted in localized areas.
2. Upper and lower values for each size are the respective maximum and minimum dimensions.



COUPLING



HALF COUPLING



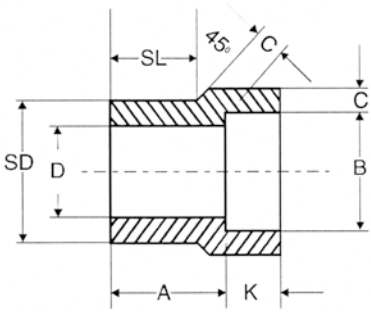
CAP

Dimensions in mm

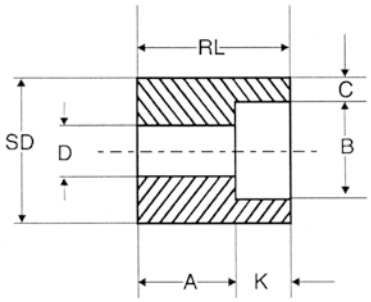
DN	Nom. Pipe Size	Centre to Bottom of Socket-A						Laying Lengths		Tolerances ±			End Wall Thickness K Min.		
		90° Elbows Tees, Crosses			45° Elbows			C-lings	Half C-lings	A	E	F			
		Class Designation			Class Designation								Class Designation		
		3000	6000	9000	3000	6000	9000	E	F				3000	6000	9000
6	1/8	11.0	11.0		8.0	8.0		6.5	16.0	1.0	1.5	1.0	4.8	6.4	
8	1/4	11.0	13.5		8.0	8.0		6.5	16.0	1.0	1.5	1.0	4.8	6.4	
10	3/8	13.5	15.5		8.0	11.0		6.5	17.5	1.5	3.0	1.5	4.8	6.4	
15	1/2	15.5	19.0	25.5	11.0	12.5	15.5	9.5	22.5	1.5	3.0	1.5	6.4	7.9	11.2
20	3/4	19.0	22.5	28.5	13.0	14.0	19.0	9.5	24.0	1.5	3.0	1.5	6.4	7.9	12.7
25	1	22.5	27.0	32.0	14.0	17.5	20.5	12.5	28.5	2.0	4.0	2.0	9.6	11.2	14.2
32	1-3/4	27.0	32.0	35.0	17.5	20.5	22.5	12.5	30.0	2.0	4.0	2.0	9.6	11.2	14.2
40	1-1/2	32.0	38.0	38.0	20.5	25.5	25.5	12.5	32.0	2.0	4.0	2.0	11.2	12.7	15.7
50	2	38.0	41.0	54.0	25.5	28.5	28.5	19.0	41.0	2.0	4.0	2.0	12.7	15.7	19.0
65	2-1/2	41.0			28.5			19.0	43.0	2.5	5.0	2.5	15.7	19.0	
80	3	57.0			32.0			19.0	44.5	2.5	5.0	2.5	19.0	22.4	
100	4	66.5			41.0			19.0	48.0	2.5	5.0	2.5	22.4	28.4	

Notes:
1. Average of Socket Wall Thickness around periphery shall be no less than listed values. The minimum values are permitted in localized areas.
2. Upper and lower values for each size are the respective maximum and minimum dimensions.

Socket-Welding Reducers inserts
MSS SP-79



TYPE 1



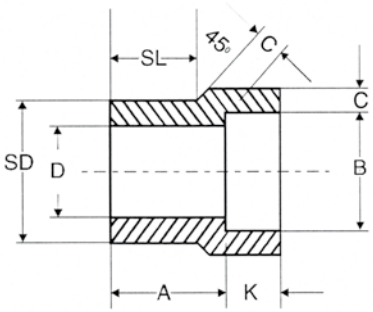
TYPE 2 (1)

Dimensions in mm

Nom. Pipe Size			Type (2)		Socket Dia	Socket Depth Min.	Shank Dia.	Laying Length A		Bore D		Wall Min. C		Length SL		Length RL (Min.)	
			3M	6M	B	K	SD	3M	6M	3M	6M	3M	6M	3M	6M	3M	6M
3/8	x	1/4	1	1	14.35	10	17.15	19	21	9.0	6.5	3.78	4.60	14	16		
1/2	x	3/8	1	1	17.78	10	21.34	21	23	12.5	9.0	4.01	5.03	16	16		
1/2	x	1/4	1	1	14.35	10	21.34	21	21	9.0	6.5	3.78	4.60	16	16		
3/4	x	1/2	1	1	21.97	10	26.67	22	25	16.0	11.5	4.67	5.97	17	19		
3/4	x	3/8	2	1	17.78	10	26.67	16	22	12.5	9.0	4.01	5.03		19	27	
3/4	x	1/4	2	2	14.35	10	26.67	18	22	9.0	6.5	3.78	4.60			27	32
1	x	3/4	1	1	27.31	13	33.49	24	28	21.0	15.5	4.90	6.96	19	21		
1	x	1/2	2	1	21.97	10	33.40	16	28	16.0	11.5	4.67	5.97		21	28	
1	x	3/8	2	2	17.78	10	33.40	18	22	12.5	9.0	4.01	5.03			28	33
1	x	1/4	2	2	14.35	10	33.40	19	24	9.0	6.5	3.78	4.60			28	33
1-1/4	x	1	1	1	34.04	13	42.16	25	30	26.5	20.5	5.69	7.92	21	22		
1-1/4	x	3/4	2	2	27.31	13	42.16	18	21	21.0	15.5	4.90	6.96			32	35
1-1/4	x	1/2	2	2	21.97	10	42.16	19	22	16.0	11.5	4.67	5.97			32	35
1-1/4	x	3/8	2	2	17.78	10	42.16	21	24	12.5	9.0	4.01	5.03			32	35
1-1/4	x	1/4	2	2	14.35	10	42.16	22	25	9.0	6.5	3.78	4.60			32	35
1-1/2	x	1-1/4	1	1	42.80	13	48.26	28	35	35.0	29.5	6.07	7.92	22	25		
1-1/2	x	1	2	1	34.04	13	48.26	18	29	26.5	20.5	5.69	7.92		25	33	
1-1/2	x	3/4	2	2	27.31	13	48.26	19	25	21.0	15.5	4.90	6.96			33	40
1-1/2	x	1/2	2	2	21.97	10	48.26	21	27	16.0	11.5	4.67	5.97			33	40
1-1/2	x	3/8	2	2	17.78	10	48.26	22	28	12.5	9.0	4.01	5.03			33	40
2	x	1-1/2	1	1	48.90	13	60.32	32	39	41.0	34.0	6.35	8.9	25	28		
2	x	1-1/4	2	2	42.80	13	60.32	21	24	35.0	29.5	6.07	7.92			38	41
2	x	1	2	2	34.04	13	60.32	22	25	26.5	21.0	5.69	7.92			38	41
2	x	3/4	2	2	27.31	13	60.32	24	27	21.0	15.5	4.90	6.96			38	41
2	x	1/2	2	2	21.97	10	60.32	25	28	16.0	11.5	4.67	5.97			38	41

1. At the option of the manufacturer Type 2 Reducers may be furnished in Type 1 configuration.
2. 3M & 6M symbols denote 3000 and 6000 classes.

Socket-Welding Reducers inserts
MSS SP-79



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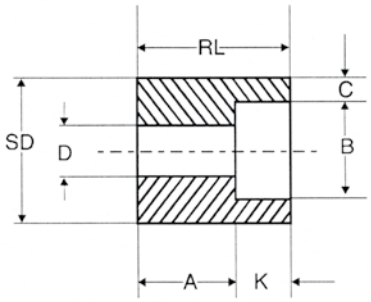


TYPE 2 (1)

Dimensions in mm

Nom. Pipe Size			Type (2)		Socket Dia	Socket Depth Min.	Shank Dia.	Laying Length A		Bore D		Wall Min. C		Length SL		Length RL (Min.)	
			3M	6M	B	K	SD	3M	6M	3M	6M	3M	6M	3M	6M	3M	6M
2-1/2	x	2	1	1	61.37	16	73.02	46	43	52.5	43.0	6.93	10.92	38	32		
2-1/2	x	1-1/2	2	2	48.90	13	73.02	35		41.0		6.35				54	
2-1/2	x	1-1/4	2	2	42.80	13	73.02	37		35.0		6.07				54	
2-1/2	x	1	2	2	34.04	13	73.02	38		26.5		5.69				54	
2-1/2	x	3/4	2	2	27.31	13	73.02	40		21.0		4.90				54	
3	x	2-1/2	1		74.07	16	88.90	38		62.5		8.76		32			
3	X	2			61.37	16	88.90	25		52.5		6.93				48	
3	x	1-1/2	2		48.90	13	88.90	29		41.0		6.35				48	
3	x	1-1/4	2		42.80	13	88.90	30		35.0		6.07				48	
3	x	1	2		34.04	13	88.90	32		26.5		5.69				48	
4	x	3	2		90.04	16	114.30	33		78.0		9.5				60	
4	x	2-1/2	2		74.07	16	114.30	38		62.5		8.76				60	
4	x	2			61.37	16	114.30	38		52.5		6.93				60	
4	x	1-1/2	2		48.90	13	114.30	42		41.0		6.35				60	
4	x	1-1/4	2		42.80	13	114.30	43		35.0		6.07				60	

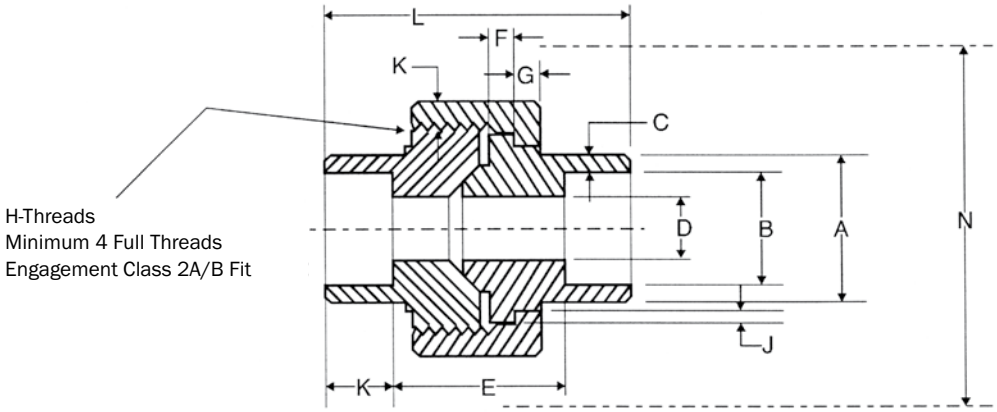
1. At the option of the manufacturer Type 2 Reducers may be furnished in Type 1 configuration.
2. 3M & 6M symbols denote 3000 and 6000 classes.

TOLERANCES

Laying length A-	Sizes 3/8“ thru3/4“	+ 1.5 mm / - 0.0 mm
	Sizes 1“ thru2“	+ 2.0 mm / - 0.0 mm
	Sizes 2-1/2“ thru4“	+ 2.5 mm / - 0.0 mm
Laying length B-	Sizes 1/4“ thru2“	± 0.25 mm
	Sizes 2-1/2“ thru3“	+ 0.4 mm / - 0.25 mm

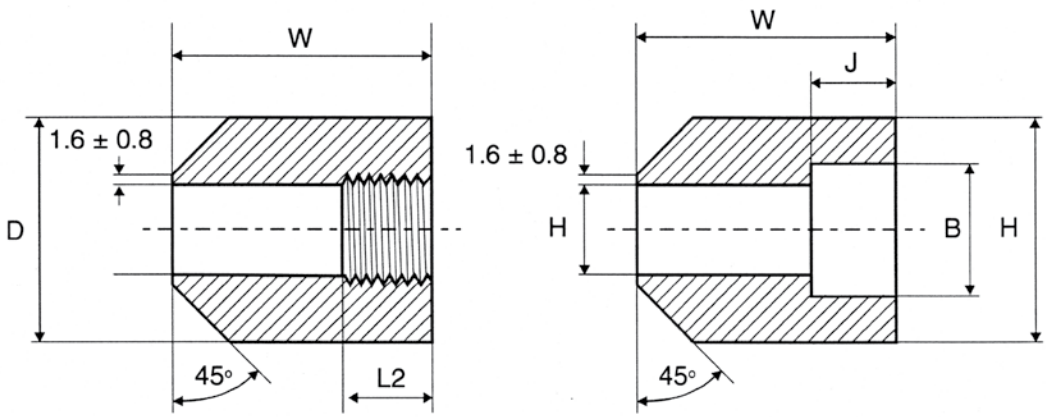
Bore D	-Sizes 1/4“	thru2“	± 0.8 mm
	-Sizes 2-1/2“	thru3“	± 1.5 mm
Shank Dia SD	-Sizes 3/8“	thru1-1/2“	± 0.50 mm
	-Sizes 2“	thru 3“	± 0.75 mm
	-Sizes 4“		± 0.75 mm
Shank Lg. SL	-Sizes 3/8“	thru3/4“	+ 0.0 mm/-1.5 mm
	-Sizes 1“	thru2“	+ 0.0 mm/-2.0 mm
	-Sizes 2-1/2“	thru4“	+ 0.0 mm/-2.5 mm

Socket-Welding Union
MSS SP-83



Dimensions in mm

Nom. Pipe Size	Pipe End Min. A	Socket Bore Dia B	Socket Wall Min. C	Water Way Bore D	Laying Length E	Male Flange Min. F	Nut Min. G	Thrds Per 25.4 mm Max. H	Bearing Min. J	Depth of Socket Min. K	Length Assem. Nom. L	Clear Assem. Nut N
1/8	21.8	10.92 10.67	3.17	6.83 6.43	22.4 19.0	3.17	3.17	16	1.24	9.6	41.4	49.0
1/4	21.8	14.22 13.97	3.30	9.85 9.45	22.4 19.0	3.17	3.17	16	1.24	9.6	41.4	49.0
3/8	25.9	17.78 17.53	3.48	13.92 13.51	26.9 20.6	3.43	3.43	14	1.37	9.6	46.0	55.0
1/2	31.2	21.84 21.59	4.06	17.47 17.07	26.9 20.6	3.68	3.68	14	1.50	9.6	49.0	57.0
3/4	37.1	27.18 26.92	4.27	21.79 21.39	31.8 25.4	4.06	4.06	11	1.68	12.7	56.9	67.0
1	45.5	34.04 33.78	4.95	28.14 27.74	34.3 26.2	4.57	4.44	11	1.85	12.7	62.0	79.0
1-1/4	54.9	42.67 42.42	5.28	35.76 35.36	4.06 32.5	5.33	5.21	11	2.13	12.7	71.1	94.0
1-1/2	61.5	48.77 48.51	5.54 5.54	41.61 41.20	42.2 34.0	5.84	5.59	10	2.31	12.7	76.5	111.0
2	75.2	61.47 61.21	6.05	52.53 52.12	45.5 37.3	6.60	6.35	10	2.69	15.8	86.1	132.0
2-1/2	91.7	74.17 73.66	7.65	64.72 64.31	61.7 52.1	7.49	7.11	8	3.07	15.8	102.4	148.0
3	109.2	90.17 89.66	8.31	77.67 77.27	63.8 53.6	8.25	8.00	8	3.53	15.8	109.0	175.0

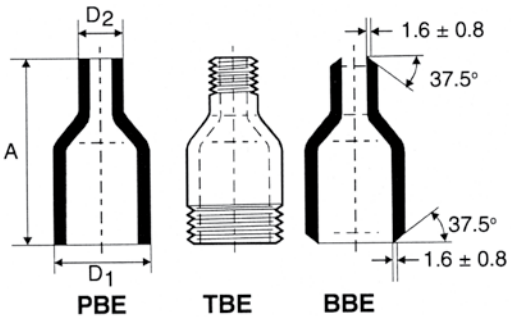


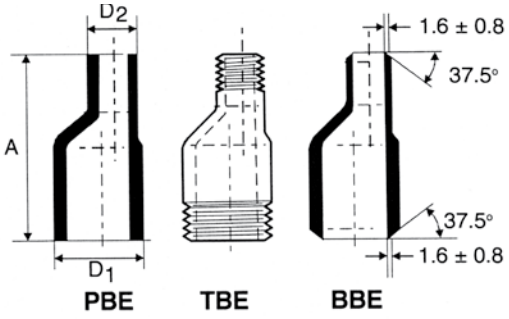
THREADED
Dimensions in Millimeters

Size (in)	D	W	L2 (Min)
3000Lbs			
1/4	22.1	39.9	10.0
3/8	25.9	50.0	10.5
1/2	34.0	50.0	13.5
3/4	39.1	50.0	14.0
1	48.0	50.0	17.5
1-1/4	59.9	50.0	18.0
1-1/2	65.0	50.0	18.5
2	80.0	59.9	19.0
6000Lbs			
1/4	25.9	39.9	10.0
3/8	36.0	50.0	10.5
1/2	43.9	50.0	13.5
3/4	50.0	50.0	14.0
1	59.9	50.0	17.5
1-1/4	65.0	50.0	18.0
1-1/2	80.0	50.0	18.5
2	95.0	59.9	19.0

SOCKET-WELDING
Dimensions in Millimeters

Size (in)	B	D	J (Min)	W	H
3000Lbs					
1/4	14.3	9.2	9.9	39.9	22.3
3/8	17.8	12.5	10.9	50.0	26.5
1/2	21.9	15.8	13.0	50.0	34.2
3/4	27.3	20.9	14.0	50.0	39.5
1	34.0	26.6	16.0	50.0	46.3
1-1/4	42.8	35.0	18.0	50.0	55.2
1-1/2	48.9	40.9	19.1	50.0	65.1
2	61.3	52.6	22.1	59.9	80.2
6000Lbs					
1/2	21.9	11.7	14.0	50.0	43.3
3/4	27.3	15.5	16.0	50.0	49.1
1	34.0	20.7	18.0	50.0	56.0
1-1/4	42.8	29.4	19.1	50.0	65.2
1-1/2	48.9	33.9	22.0	50.0	80.1
2	61.3	42.8	25.9	59.5	95.1





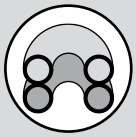
Concentric

Eccentric

Dimensions in Millimeters

Nominal Pipe Size (NPS)	Outside Diameter Large End D1	Outside Diameter Small End D2	End To End „A“
1/4 x 1/8	13.7	10.3	57
3/8 x 1/8	17.1	10.3	64
3/8 x 1/4	17.1	13.7	64
1/2 x 1/8	21.3	10.3	70
1/2 x 1/4	21.3	13.7	70
1/2 x 3/8	21.3	17.1	70
3/4 x 1/8	26.7	10.3	76
3/4 x 1/4	26.7	13.7	76
3/4 x 3/8	26.7	17.1	76
3/4 x 1/2	26.7	21.3	76
1 x 1/8	33.4	10.3	89
1 x 1/4	33.4	13.7	89
1 x 3/8	33.4	17.1	89
1 x 1/2	33.4	21.3	89
1 x 3/4	33.4	26.7	89
1-1/4 x 1/8	42.2	10.3	102
1 1/4 x 1/4	42.2	13.7	102
1-1/4 x 3/8	42.2	17.1	102
1-1/4 x 1/2	42.2	21.3	102
1-1/4 x 3/4	42.2	26.7	102
1-1/4 x 1	42.2	33.4	102
1-1/2 x 1/8	48.3	10.3	114
1-1/2 x 1/4	48.3	13.7	114
1-1/2 x 3/8	48.3	17.1	114
1-1/2 x 1/2	48.3	21.3	114
1-1/2 x 3/4	48.3	26.7	114
1-1/2 x 1	48.3	33.4	114
1-1/2 x 1-1/4	48.3	42.2	114

Nominal Pipe Size (NPS)	Outside Diameter Large End D1	Outside Diameter Small End D2	End To End „A“
2 x 1/8	60.3	10.3	165
2 x 1/4	60.3	13.7	165
2 x 3/8	60.3	17.1	165
2 x 1/2	60.3	21.3	165
2 x 3/4	60.3	26.7	165
2 x 1	60.3	33.4	165
2 x 1-1/4	60.3	42.2	165
2 x 1-1/2	60.3	48.3	165
2-1/2 x 1/8	73.0	10.3	178
2-1/2 x 1/4	73.0	13.7	178
2-1/2 x 3/8	73.0	17.1	178
2-1/2 x 1/2	73.0	21.3	178
2-1/2 x 3/4	73.0	26.7	178
2-1/2 x 1	73.0	33.4	178
2-1/2 x 1-1/4	73.0	42.2	178
2-1/2 x 1-1/2	73.0	48.3	178
2-1/2 x 2	73.0	60.3	178
3 x 1/8	88.9	10.3	203
3 x 1/4	88.9	13.7	203
3 x 3/8	88.9	17.1	203
3 x 1/2	88.9	21.3	203
3 x 3/4	88.9	26.7	203
3 x 1	88.9	33.4	203
3 x 1-1/4	88.9	42.2	203
3 x 1-1/2	88.9	48.3	203
3 x 2	88.9	60.3	203
3 x 2-1/2	88.9	73.0	203
3-1/2 x 1/8	101.6	10.3	203



Dimensions in Millimeters

Concentric

Nominal Pipe Size (NPS)	Outside Diameter Large End D1	Outside Diameter Small End D2	End To End „A“
3-1/2 x 1/4	101,6	13,7	203
3-1/2 x 3/8	101,6	17,1	203
3-1/2 x 1/2	101,6	21,3	203
3-1/3 x 3/4	101,6	26,7	203
3-1/2 x 1	101,6	33,4	203
3-1/2 x 1-1/4	101,6	42,2	203
3-1/2 x 1-1/2	101,6	48,3	203
3-1/2 x 1	101,6	60,3	203
3-1/2 x 2-1/2	101,6	73,0	203
3-1/2 x 3	101,6	88,9	203
4 x 1/4	114,3	13,7	229

Eccentric

Nominal Pipe Size (NPS)	Outside Diameter Large End D1	Outside Diameter Small End D2	End To End „A“
4 x 3/8	114,3	17,1	229
4 x 1/2	114,3	21,3	229
4 x 3/4	114,3	26,7	229
4 x 1	114,3	33,4	229
4 x 1-1/4	114,3	42,2	229
4 x 1-1/2	114,3	48,3	229
4 x 2	114,3	60,3	229
4 x 2-1/2	114,3	73,0	229
4 x 3	114,3	88,9	229
4 x 3-1/2	114,3	101,6	229

PBE: PLAIN BOTH ENDS
PSE: PLAIN SMALL ENDS
PLE: PLAIN LARGE ENDS

BBE: BEVEL BOTH ENDS
BSE: BEVEL SMALL ENDS
BLE: BEVEL LARGE ENDS

TBE: THREAD BOTH ENDS
TSE: THREAD SMALL ENDS
TLE: THREAD LARGE ENDS

TOLERANCES

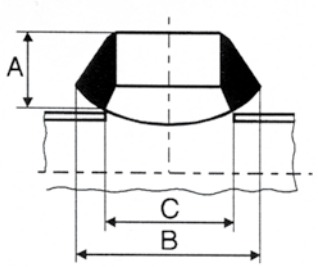
Nominal Pipe Size (NPS)	Overall length (mm)	Outside Diameter at End: Square Cut Ends (mm)	Outside Diameter at End: Other End Connections (mm)	Wall Thickness (see Note 1)
1/8 - 3/8	± 2	+ 0.40 - 0.80	± 0.80	Not
1/2 - 1-1/2	± 2	+ 0.40 - 0.80	+ 1.50 - 0.80	less than 87.5% of
2 - 2-1/2	± 3	± 0.80	+ 1.50 - 0.80	nominal wall
3 - 4	± 3	± 0.80	± 1.50	Thickness

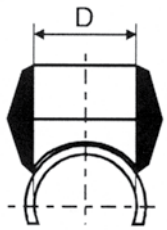
Dimensions in Millimeters.
Note 1: Prior to threading or grooving

(Unit kg)

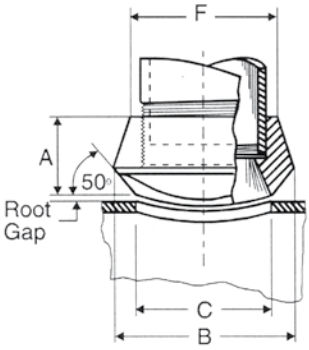
WEIGHT (KGS) SIZE	1/8“	1/4“	3/8“	1/2“	3/4“	1“	1-1/4“	1-1/2“	2“	2-1/2“	3“	4“
2000LBS SCREWED												
90° ELBOW	0.10	0.08	0.13	0.22	0.32	0.47	0.74	0.93	1.53	2.98	4.54	10.21
45° ELBOW	0.08	0.06	0.10	0.20	0.27	0.41	0.64	0.75	1.19	3.46	5.44	8.9
TEE	0.13	0.12	0.15	0.31	0.43	0.61	0.95	1.25	1.93	4.11	6.12	14.74
3000LBS SCREWED												
90° ELBOW	0.10	0.14	0.27	0.41	0.72	1.03	1.31	2.21	2.47	4.53	7.77	13.27
45° ELBOW	0.08	0.12	0.24	0.34	0.54	0.92	0.97	1.84	1.93	3.46	5.44	8.96
TEE	0.13	0.13	0.38	0.56	0.84	1.70	1.95	3.18	3.63	6.24	9.53	17.24
COUPLING	0.05	0.05	0.06	0.13	0.19	0.39	0.68	0.99	1.37	2.07	3.08	5.44
HALF COUPLING	0.03	0.03	0.03	0.06	0.10	0.20	0.34	0.50	0.68	1.03	1.54	2.72
RED-COUPLING	0.05	0.05	0.06	0.13	0.19	0.39	0.68	0.99	1.37	2.07	3.08	5.44
CAP	0.04	0.04	0.05	0.11	0.18	0.35	0.60	0.70	1.06	1.84	2.65	4.57
STREET ELBOW	0.10	0.14	0.27	0.41	0.66	0.97	1.31	2.21	2.47			
UNION	0.28	0.28	0.28	0.31	0.46	0.67	1.03	1.51	2.43	3.48	5.25	12
6000 LBS SCREWED												
90° ELBOW	0.17	0.30	0.45	0.72	1.15	1.61	2.67	3.20	5.90	9.88	16.43	
45° ELBOW	0.11	0.27	0.39	0.61	1.02	1.17	2.67	2.61	4.37	7.01	14.16	
TEE	0.20	0.42	0.63	0.98	1.65	2.19	3.52	4.42	7.88	13.11	22.50	
COUPLING	0.08	0.06	0.18	0.31	0.41	0.85	1.05	1.87	3.40	4.20	6.10	10.04
HALF COUPLING	0.04	0.04	0.09	0.16	0.20	0.43	0.53	0.91	1.70	2.10	3.05	5.02
RED-COUPLING	0.08	0.06	0.18	0.31	0.41	0.85	1.05	1.81	3.40	4.20	6.10	10.04
CAP	0.06	0.06	0.09	0.14	0.20	0.34	0.59	0.77	1.47			
PLUGS & BUSHING 2000 / 3000 / 6000LBS												
SQUARE HEAD	0.01	0.01	0.03	0.05	0.09	0.16	0.27	0.38	0.63	0.96	1.53	3.83
HEX HEAD	0.01	0.03	0.05	0.07	0.14	0.25	0.47	0.62	1.10	1.73	2.15	5.90
ROUND HEAD	0.02	0.05	0.07	0.12	0.20	0.34	0.55	0.72	1.41	2.21	3.26	6.01
BUSHING		0.01	0.01	0.03	0.05	0.09	0.25	0.34	0.45	0.60	1.16	3.20
3000LBS SOCKET WELD												
90° ELBOW	0.09	0.10	0.10	0.22	0.31	0.53	0.72	0.97	1.71	3.80	5.50	10.95
45° ELBOW	0.07	0.06	0.09	0.20	0.26	0.40	0.64	0.77	1.22	3.57	5.10	9.41
TEE	0.11	0.09	0.15	0.32	0.42	0.65	0.99	1.35	2.07	3.90	5.90	14.20
COUPLING	0.04	0.05	0.07	0.13	0.19	0.27	0.49	0.59	0.97	1.42	1.88	3.31
HALF COUPLING	0.04	0.05	0.07	0.13	0.19	0.27	0.49	0.59	0.97	1.42	1.88	3.31
RED COUPLING	0.04	0.05	0.07	0.13	0.19	0.27	0.49	0.59	0.97	1.42	1.88	3.31
CAP	0.03	0.04	0.05	0.10	0.16	0.22	0.41	0.51	0.85	1.24	1.94	3.31
UNION	0.28	0.28	0.28	0.31	0.46	0.67	1.03	1.51	2.43	3.48	5.25	12
6000LBS SOCKET WELD												
90°ELBOW				0.40	0.63	1.19	1.36	2.41	2.72	4.75	8.55	14.31
45°ELBOW				0.30	0.57	0.88	1.11	2.01	2.15	4.05	6.02	11.17
TEE				0.54	0.88	1.44	1.85	3.27	3.60	6.94	10.61	16..92
COUPLING				0.24	0.33	0.65	0.75	1.20	2.12	2.86	4.01	6.35
HALF COUPLING				0.24	0.33	0.65	0.75	1.20	2.12	2.86	4.01	6.35
RED COUPLING				0.24	0.33	0.65	0.75	1.20	2.12	2.86	4.01	6.35
CAP				0.19	0.26	0.53	0.64	0.97	1.64	2.22	3.45	6.03

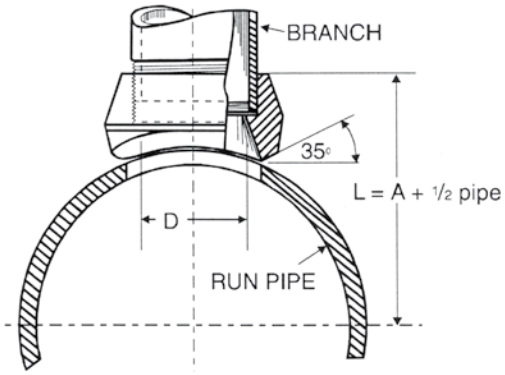
Outlet, full sizes and reducing sizes
Sch 40S, 80S, 160 and XXS



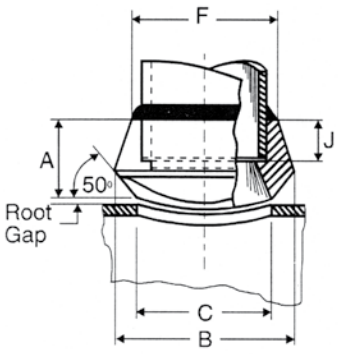


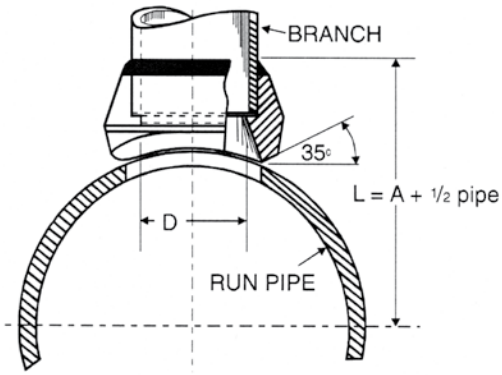
Outlet size in	Nominal run pipe size in	Dimensions A mm	B mm	C mm	D mm	Weight kg
Schedule 40S-80S						
1/8	3/8 to 36	14.3	25.4	15.9	-	0.04
1/4	3/8 to 36	14.3	5.4	15.9	-	0.04
3/8	1/2 to 36	19.1	31.8	19.1	-	0.07
1/2	1/2 to 36	19.1	34.9	23.8	15.9	0.07
3/4	3/4 to 36	22.2	41.3	30.2	20.6	0.11
1	1 to 36	27.0	50.8	36.5	26.2	0.18
1-1/4	1-1/4 to 36	31.8	60.3	44.5	34.9	0.32
1-1/2	1-1/2 to 36	33.3	73.0	50.8	41.3	0.36
2	2 to 36	38.1	88.9	65.1	52.4	0.68
2-1/2	2-1/2 to 36	41.3	103.2	76.2	61.9	1.02
3	3 to 36	44.5	122.2	93.7	77.8	1.70
4	4 to 36	50.8	152.4	120.7	101.6	3.04
5	5 to 36	54.0	181.0	147.6	128.6	3.8
6	6 to 36	60.3	215.9	169.9	154.0	5.58
8	8 to 36	69.9	263.5	220.7	201.6	9.53
10	10 to 36	77.8	319.1	274.6	254.0	15.88
12	12 to 36	85.7	377.8	325.8	304.8	26.30
Schedule 160-XXS						
1/2	1/2 to 24	28.6	34.9	14.3	-	0.11
3/4	3/4 to 24	31.8	44.5	19.1	-	0.32
1	1 to 24	38.1	50.8	25.4	-	0.38
1-1/4	1-1/4 to 24	44.5	61.9	33.3	-	0.57
1-1/2	1-1/2 to 24	50.8	69.9	38.1	-	0.79
2	2 to 24	55.6	81.0	42.9	-	0.97
2-1/2	2-1/2 to 24	61.9	96.8	54.0	-	1.53
3	3 to 24	73.0	120.7	73.0	-	2.87
4	4 to 24	84.1	152.4	98.4	-	4.76
5	5 to 24	93.7	187.3	122.2	-	6.46
6	6 to 24	104.8	220.7	146.1	-	12.70
8	8 to 24	111.1	284.2	173.0	-	20.41
10	10 to 24	136.5	342.9	215.9	-	39.46
12	12 to 24	158.8	422.3	257.2	-	62.14





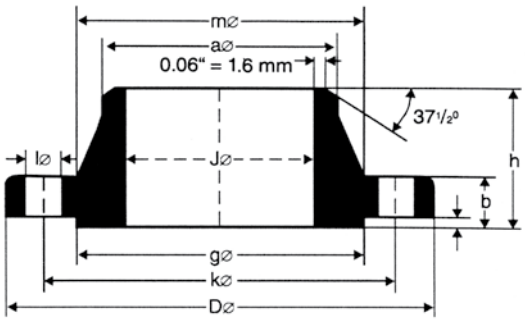
	Run Pipe Size (in)	Out-Let Pipe NPS	A	B	C	F
3000Lb Standard and extra strong						
36-	3/8	1/8	19.1	25.4	15.9	17.3
	3/8	1/4	19.1	25.4	15.9	22.0
	1/2	3/8	20.6	31.8	19.1	25.8
	3/4	1/2	25.4	34.9	23.8	31.3
	1	3/4	26.9	44.5	30.2	37.1
	1-1/4	1	33.3	54.0	36.5	45.5
	1-1/2	1-1/4	33.3	65.1	44.5	54.9
	2	1-1/2	35.1	73.0	50.8	61.6
	2-1/2	2	38.1	88.9	65.1	75.3
	3	2-1/2	46.0	103.2	76.2	91.7
	4	3	50.8	122.4	93.7	109.1
	6	4	57.2	152.4	120.7	137.2
6000Lb Schedule 160 and double extra strong						
36-	3/4	1/2	31.8	44.5	19.1	33.9
	1	3/4	36.6	50.8	25.4	41.2
	1-1/4	1	39.6	61.9	33.3	49.9
	1-1/2	1-1/4	41.2	69.9	38.1	58.6
	2	1-1/2	42.9	82.6	49.2	66.7
	2-1/2	2	52.3	103.2	69.9	83.2





Dimensions in Millimeters.

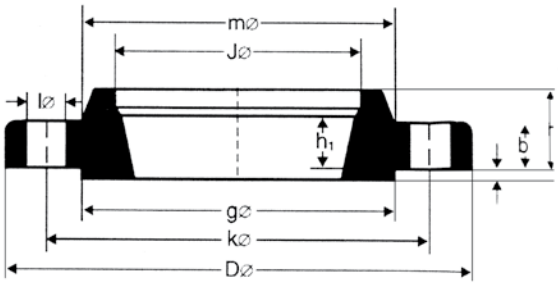
	Run Pipe Size (in)	Out-Let (Pipe NPS)	A	B	C	D	F	J
3000Lb Standard and extra strong								
36-	3/8	1/8	19.1	25.4	15.9	10.9	17.3	9.5
	3/8	1/4	19.1	25.4	15.9	14.4	22.0	9.5
	1/2	3/8	20.6	31.8	19.1	17.8	25.8	9.5
	3/4	1/2	25.4	34.9	23.8	22.0	31.3	11.1
	1	3/4	26.9	44.5	30.2	27.3	37.1	12.7
	1-1/4	1	33.3	54.0	36.5	34.1	45.5	13.5
	1-1/2	1-1/4	33.3	65.1	44.5	42.8	54.9	15.1
	2	1-1/2	35.1	73.1	50.8	48.9	61.6	15.9
	2-1/2	2	38.1	88.9	65.1	61.4	75.3	17.5
	3	2-1/2	39.6	103.2	76.2	74.2	91.7	23.8
	4	3	44.5	122.2	93.7	90.1	109.1	28.6
	6	4	47.8	152.4	120.7	115.8	137.2	29.4
6000Lb Schedule 160 and double extra strong								
36-	3/4	1/2	31.8	44.5	19.1	22.0	33.9	9.5
	1	3/4	36.6	50.8	25.4	27.3	41.2	14.3
	1-1/4	1	39.6	61.9	33.3	34.1	49.9	15.9
	1-1/2	1-1/4	41.2	69.9	38.1	42.8	58.6	20.6
	2	1-1/2	42.9	82.6	49.2	48.9	66.7	20.6
	2-1/2	2	52.3	103.2	58.7	61.4	83.2	22.2



ANSI B 16.5

D	Outside Diameter	When OD is 24“ or less When OD is over 24“	±0.06“ ±0.12“	±1.6 mm ±3.2 mm
J	Inside Diameter	10“ and smaller 12“ to 18“ 20“ and larger	+0.03“ +0.06“ +0.12“ - 0.06“ +0.8 mm +1.6 mm +3.2 mm - 1.6 mm	
g	Diameter of Contact Face	0.03“ Raised Face 0.25“ Raised Face Tongue and Groove, Male and Female	±0.03“ ±0.02“ ±0.02“	±0.8 mm ±0.5 mm ±0.5 mm
a	Diameter of Hub at Point of Welding	5“ and smaller 6“ and larger	+0.09“ - 0.03“ +0.16“ - 0.03“ +2.4 mm - 0.8 mm +4.0 mm - 0.8 mm	
m	Diameter of Hub at Base_	When Hub Base is 24“ or less When OD is over 24“	±0.06“ ±0.12“	±1.6 mm ±3.2 mm
l	Drilling and Facing	Bolt Circle Diameter k±0.06“ Center-to-center of adjacent bolt holes Max. eccentricity between bolt cirlce dia.k and machined facing diameters: sizes 2-1/2“ and smaller sizes 3“ and larger	±1.6 mm ±0.03“ 0.03“ 0.06“	 ±0.8 mm 0.8 mm 1.6 mm
h	Overall Length of Hub	10“ and smaller 12“ and larger	±0.06“ ±0.12“	±1.6 mm ±3.2 mm
b	Thickness	18“ and smaller 20“ and larger	+0.12“ +0.19“	+3.2 mm +4.8 mm

1) This tolerance is not covered by ANSI B 16.5.

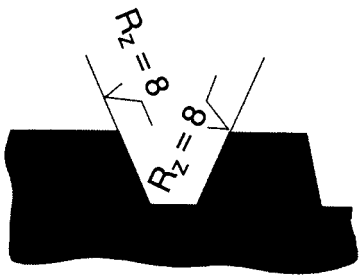


ANSI B 16.5

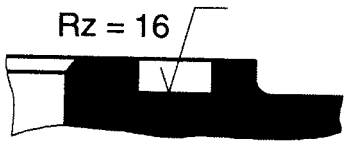
D	Outside Diameter	When OD is 24“ or less When OD is over 24“	± 0.06“ ± 0.12“	±1.6 mm ±3.2 mm
$J_{1,2,3}$	Inside Diameter	Slip-on and Lap Joint 10“ and smaller 12“ and larger Threaded	+0.03“ +0.06“ Within limits on boring gauge	+0.8 mm +1.6 mm
g	Diameter of Counterbore Diameter of Contact Face	Same as for inside Diameter 0.03“ Raised Face 0.25“ Raised Face Tongue and Groove, Male and Female	 ±0.03“ ±0.02“ ±0.02“ not for flanges with ring joint	 ±0.8 mm ±0.5 mm ±0.5 mm
m	Outside Diameter of Hub1)	12“ and smaller 14“ and larger	+0.09“ - 0.06“ ±0.12“ +2.4 mm - 1.6 mm ±3.2 mm	
l	Drilling and Facing	Bolt Circle Diameter k Center-to-center of adjacent bolt holes Max. eccentricity between bolt cirlce dia.k and machined facing diameters: sizes 2-1/2“ and smaller sizes 3“ and larger	±0.06“ ±0.03“ 0.03“ 0.06“	±1.6 mm ±0.8 mm 0.8 mm 1.6 mm
$L_{1,2,3}$	Overal Length of Hub	18“ and smaller 20“ and larger	+0.12“ - 0.03“ +0.19“ - 0.03“ +3.2 mm - 0.8 mm +4.8 mm - 1.6 mm	
b	Thickness	18“ and smaller 20“ and larger	+0.12“ +0.19“	+3.2 mm +4.8 mm

1) This tolerance is not covered by ANSI B 16.5.

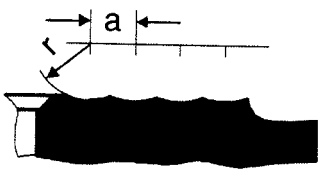
Ring Joint Facings



Tongue/Groove
Small Male/Female Facings



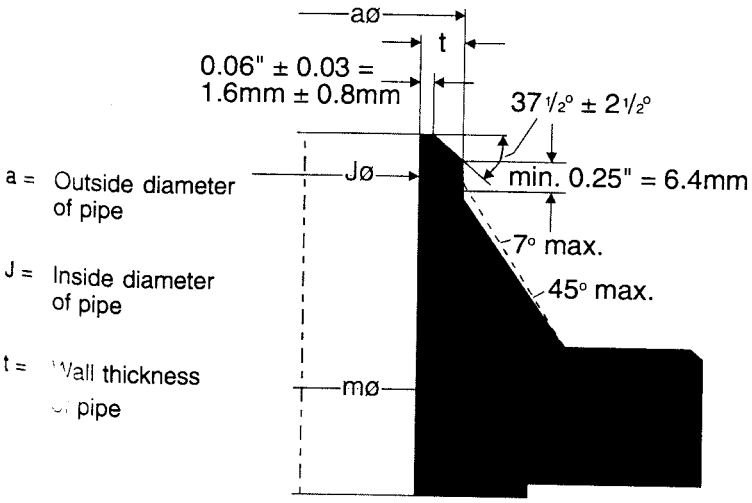
Stock Finiosh
Large Male/Female Facings



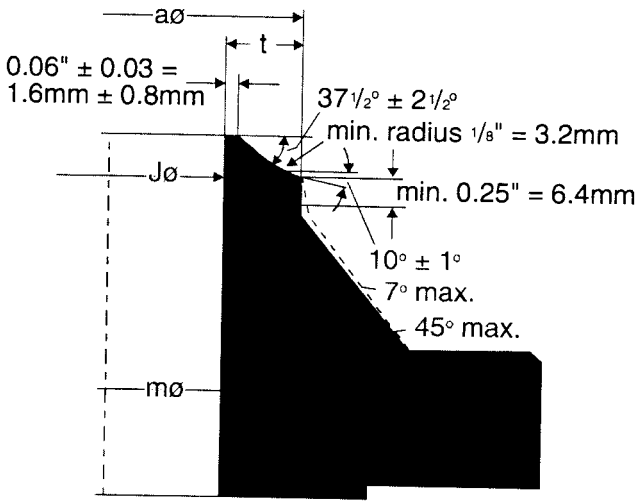
Facings in other designs on enquiry

	≤ 12“ ≤ 300 mm	> 12“ > 300 mm
r (mm)	1.2 - 1.6	1.6 - 3.2
a (mm/U)	0.75 - 0.9	0.8 - 1.0)

Welding Ends, ANSI B 16.25

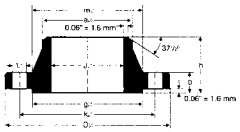


Bevel for Wall Thicknesses (t) 0.19" to 0.88 " inclusive

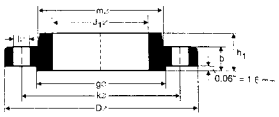


Bevel for Wall Thicknesses (t) greater than 0.88 "

Flanges 150lb/sq.in.
ANSI B16-5



WELDING NECK



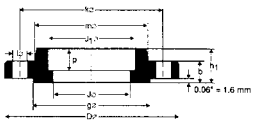
SLIP-ON

Pipe		Flange											
Nom. Size	O.D. in. mm	D in. mm	J in. mm	J1 in. mm	J2 in. mm	J3 in. mm	p in. mm	r in. mm	b in. mm	h in. mm	h1 in. mm	h2 in. mm
1/2“	0.84	3.50	*1 = Refer to ANSI B36-10 / B36-19 or as specified by purchaser	0.88	0.90	*2 = No counter bore required on 150lb threaded flanges	0.38	0.12	0.44	1.88	0.62	0.62
	21.3	88.9		22.4	22.9		9.7	3.0	11.2	47.8	15.7	15.7
3/4“	1.05	3.88		1.09	1.11		0.44	0.12	0.50	2.06	0.62	0.62
	26.7	98.6		27.7	28.2		11.2	3.0	12.7	52.3	15.7	15.7
1“	1.315	4.25		1.36	1.38		0.50	0.12	0.56	2.19	0.69	0.69
	33.4	108.0		34.5	35.1		12.7	3.0	14.2	55.6	17.5	17.5
1 1/4“	1.66	4.62		1.70	1.72		0.56	0.19	0.62	2.25	0.81	0.81
	42.2	117.3		43.2	43.7		14.2	4.8	15.7	57.2	20.6	20.6
1 1/2“	1.90	5.00		1.95	1.97		0.62	0.25	0.69	2.44	0.88	0.88
	48.3	127.0		49.5	50.0		15.7	6.4	17.5	62.0	22.4	22.4
2“	2.375	6.00		2.44	2.46		0.69	0.31	0.75	2.50	1.00	1.00
	60.3	152.4		62.0	62.5		17.5	7.9	19.1	63.5	25.4	25.4
2 1/2“	2.875	7.00		2.94	2.97		0.75	0.31	0.88	2.75	1.42	1.42
	73.0	177.8		74.7	75.4		19.1	7.9	22.4	69.9	28.4	28.4
3“	3.50	7.5		3.57	3.60		0.81	0.38	0.94	2.75	1.19	1.19
	88.9	190.5		90.7	91.4		20.6	9.7	23.9	69.6	30.2	30.2
3 1/2“	4.00	8.50		4.07	4.10			0.38	0.94	2.81	1.25	1.25
	101.6	215.9		103.4	104.1			9.7	23.9	71.4	31.8	31.8
4“	4.50	9.00		4.57	4.60			0.44	0.94	3.00	1.31	1.31
	114.3	228.6		116.1	116.8			11.2	23.9	76.2	33.3	33.3
5“	5.563	10.00		5.66	5.69			0.44	0.94	3.50	1.44	1.44
	141.3	254.0		143.8	144.5			11.2	23.9	88.9	36.6	36.6
6“	6.625	11.00		6.72	6.75			0.50	1.00	3.50	1.56	1.56
	168.3	279.4		170.7	171.5			12.7	25.4	88.9	39.6	39.6
8“	8.625	13.50		8.72	8.75			0.50	1.12	4.00	1.75	1.75
	219.1	342.9		221.5	222.3			12.7	28.4	101.6	44.5	44.5
10“	10.75	16.00		10.88	10.92			0.50	1.19	4.00	1.94	1.94
	273	406.4		276.4	277.4			12.7	30.2	101.6	49.3	49.3
12“	12,75	19,00		12.88	12.92			0.50	1.25	4.50	2.19	2.19
	323.8	482.6		327.2	328.2			12.7	31.8	114.3	55.6	55.6
14“	14.0	21.00		14.14	14.18			0.50	1.38	5.00	2.25	3.12
	355.6	533.4		359.2	360.2			12.7	35.1	127.0	57.2	79.2
16“	16.0	23.50		16.16	16.19			0.50	1.44	5.00	2.50	3.44
	406.4	596.9		410.5	411.2			12.7	36.6	127.0	62.5	87.4
18“	18.0	25.00		18.18	18.20			0.50	1.56	5.50	2.69	3.81
	457.2	635.0		461.8	462.3			12.7	39.6	139.7	68.3	96.8
20“	20.0	27.5		20.20	20.25			0.50	1.69	5.69	2.88	4.06
	508.0	698.5		513.1	514.4			12.7	42.9	144.5	73.2	103.1
24“	24.0	32.00		24.25	24.25			0.50	1.88	6.00	3.25	4.38
	609.6	812.8		616.0	616.0			12.7	47.8	152.4	82.6	111.3

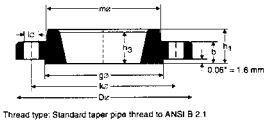
Note: Socket weld flanges up to 3“ in this presssure rating

Flanges 150lb/sq.in.
ANSI B16.5

BLIND



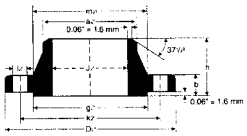
SOCKET WELD



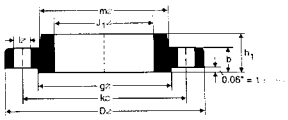
THREADED

Hub		Raised Face		Drilling Template						Approx Weight		
h3 in. mm	a in. mm	m in. mm	g in. mm	Number	l in. mm	k in. mm	W/N lbs kg	S/O lbs kg	L/J lbs kg	Blind lbs kg	S/W lbs kg	Thrd lbs kg
	0.84	1.19	1.38	4	0.62	2.38	1.1	0.9	0.8	0.9	0.9	0.9
	21.3	30.2	35.1		15.7	60.5	0.48	0.39	0.38	0.42	0.42	0.39
	1.05	1.50	1.69	4	0.62	2.75	1.6	1.2	1.2	1.3	1.3	1.2
	26.7	38.1	42.9		15.7	69.9	0.17	0.56	0.55	0.61	0.59	0.56
	1.32	1.94	2.00	4	0.62	3.12	2.2	1.7	1.7	1.9	1.8	1.7
	33.5	49.3	50.8		15.7	79.2	1.01	0.78	0.76	0.86	0.81	0.78
	1.66	2.31	2.50	4	0.62	3.50	2.9	2.3	2.2	2.6	2.4	2.3
	42.2	58.7	63.5		15.7	88.9	1.33	1.03	1.01	1.17	1.07	1.03
	1.90	2.56	2.88	4	0.62	3.88	3.8	2.9	2.9	3.4	3.0	2.9
	48.3	65.0	73.2		15.7	98.6	1.72	1.32	1.30	1.53	1.36	1.32
	2.38	3.06	3.62	4	0.75	4.75	5.7	4.5	4.5	5.3	4.6	4.5
	60.5	77.7	91.9		19.1	120.7	2.58	2.06	2.03	2.42	2.10	2.06
	2.88	3.56	4.12	4	0.75	5.50	9.1	7.2	7.2	8.7	7.3	7.2
	73.2	90.4	104.6		19.1	139.7	4.11	3.28	3.25	3.94	3.90	3.28
	3.5	4.25	5.00	4	0.75	6.00	10.8	8.5	8.4	10.9	8.6	8.5
	88.9	108.0	127.0		19.1	152.4	4.92	3.85	3.81	4.93	3.90	3.28
	4.00	4.81	5.50	8	0.75	7.00	13.4	10.6	10.5	13.6		10.6
	101.6	122.2	139.7		19.1	177.8	6.08	4.81	4.76	6.17		4.81
	4.50	5.31	6.19	8	0.75	7.50	15.1	11.7	11.6	15.4		11.7
	114.3	134.9	157.2		19.1	190.5	6.84	5.30	5.25	7.00		5.30
	5.56	6.44	7.31	8	0.88	8.50	18.9	13.4	13.3	19.9		13.4
	141.2	163.6	185.7		22.4	215.9	8.56	6.07	6.02	8.63		6.07
	6.63	7.56	8.50	8	0.88	9.50	23.3	16.4	16.3	24.9		16.4
	168.4	192.0	215.9		22.4	241.3	10.6	7.45	7.40	11.3		7.45
	8.63	9.69	10.62	8	0.88	11.75	38.8	26.7	26.7	43.2		26.7
	219.2	246.1	269.7		22.4	298.5	17.6	12.1	12.1	19.6		12.1
	10.75	12.00	12.75	12	1.00	14.25	53.0	36.3	36.1	63.4		36.3
	273.1	304.8	323.9		25.4	362.0	24.0	16.5	16.4	28.8		16.5
	12.75	14.38	15.00	12	1.00	17.00	80.4	57.7	57.5	95.2		57.7
	323.9	365.3	381.0		25.4	431.8	36.5	26.2	26.1	43.2		26.2
	14.00	15.75	16.25	12	1.12	18.75	107	76.2	76.0	128.0		76.2
	355.6	400.1	412.8		28.4	476.3	48.4	34.6	34.5	58.1		34.6
	16.00	18.00	18.50	16	1.12	21.25	134	98.7	98.2	167.0		98.7
	406.4	457.2	469.9		28.4	539.8	60.6	44.8	44.6	76.0		44.8
	18.00	19.88	21.00	16	1.25	22.75	151	108.0	107.0	206.0		108.0
	457.2	505.0	533.4		31.8	577.9	68.3	48.9	48.7	93.7		48.9
	20.00	22.00	23.00	20	1.25	25.00	186	136.0	136.0	269.0		136.0
	508.0	558.8	584.2		31.8	635.0	84.5	61.9	61.6	122.0		61.9
	24.00	26.12	27.25	20	1.38	29.50	253	191.0	191.0	408.0		191.0
	609.6	663.4	692.2		35.1	749.3	115	86.9	86.6	185.0		86.9

Flanges 300lb/sq.in.
ANSI B16-5



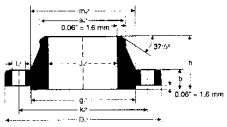
WELDING NECK


SLIP-ON

Pipe		Flange										
Nom. Size	O.D. in. mm	D in. m	J in. m	J1 in. mm	J2 in. mm	J3 in. mm	p in. mm	r in. mm	b in. mm	h in. mm	h1 in. mm	h2 in. mm
1/2“	0.84	3.75		0.88	0.90	0.93	0.38	0.12	0.56	2.06	0.88	0.88
	21.3	95.2		22.3	22.9	26.3	9.6	3.0	14.2	52.3	22.3	22.3
3/4“	1.05	4.62		1.09	1.11	1.14	0.44	0.12	0.62	2.25	1.00	1.00
	26.7	117.3		27.7	28.2	29.0	11.1	3.0	15.7	57.1	25.4	25.4
1“	1.315	4.88		1.36	1.38	1.41	0.5	0.12	0.69	2.44	1.06	1.06
	33.4	123.9		34.5	35.0	35.8	12.7	3.0	17.5	62.0	26.9	26.9
1 1/4“	1.66	5.25		1.70	1.72	1.75	0.56	0.19	0.75	2.56	1.06	1.06
	42.2	133.3		43.2	43.7	44.4	14.2	4.8	19.0	65.0	26.9	26.9
1 1/2“	1.90	6.12		1.95	1.97	1.99	0.62	0.25	0.81	2.69	1.19	1.19
	48.3	155.4		49.5	50.0	50.5	15.7	6.4	20.6	68.3	30.2	30.2
2“	2.375	6.50		2.44	2.46	2.50	0.69	0.31	0.88	2.75	1.31	1.31
	60.3	165.1		62.0	62.5	63.5	17.5	7.8	22.3	69.8	33.2	33.2
2 1/2“	2.875	7.50		2.94	2.97	3.00	0.75	0.31	1.00	3.00	1.50	1.50
	73.0	190.5		74.7	75.4	76.2	19.0	7.8	25.4	76.2	38.1	38.1
3“	3.50	8.25		3.57	3.60	3.63	0.81	0.38	1.12	3.12	1.69	1.69
	88.9	209.5		90.7	91.4	92.2	20.5	9.6	28.4	79.2	42.9	42.9
3 1/2“	4.00	9.00		4.07	4.10	4.13		0.38	1.19	3.19	1.75	1.75
	101.6	228.6		103.4	104.1	104.9		9.6	30.2	81.0	44.4	44.4
4“	4.50	10.00		4.57	4.60	4.63		0.44	1.25	3.38	1.88	1.88
	114.3	254.0		116.1	116.8	117.6		11.1	31.7	85.8	47.7	47.7
5“	5.563	11.00		5.66	5.69	5.69		0.44	1.38	3.88	2.00	2.00
	141.3	279.4		143.8	144.5	144.5		11.1	35.0	98.5	50.8	50.8
6“	6.625	12.50		6.72	6.75	6.75		0.50	1.44	3.88	2.06	2.06
	168.3	317.5		170.7	171.4	171.4		12.7	36.5	98.5	52.3	52.3
8“	8.625	15.00		8.72	8.75	8.75		0.50	1.62	4.38	2.44	2.44
	219.1	381.0		221.5	222.2	222.2		12.7	41.1	111.2	61.9	61.9
10“	10.75	17.50		10.88	10.92	10.88		0.50	1.88	4.62	2.62	3.75
	273	444.5		276.3	277.4	276.3		12.7	47.7	117.3	66.5	95.2
12“	12.75	20.50		12.88	12.92	12.94		0.50	2.00	5.12	2.88	4.00
	323.8	520.7		327.1	328.2	328.7		12.7	50.8	130.0	73.1	101.6
14“	14.0	23.00		14.14	14.18	14.19		0.50	2.12	5.62	3.00	4.38
	355.6	584.2		359.1	360.2	360.4		12.7	53.8	142.7	76.2	111.2
16“	16.0	25.50		16.16	16.19	16.19		0.50	2.25	5.75	3.25	4.75
	406.4	647.7		410.5	411.2	411.2		12.7	57.1	146.0	82.5	120.6
18“	18.0	28.00		18.18	18.20	18.19		0.50	2.38	6.25	3.50	5.12
	457.2	711.2		461.8	462.3	462.0		12.7	60.4	158.7	88.9	130.6
20“	20.0	30.50		20.20	20.25	20.19		0.50	2.50	6.38	3.75	5.50
	508.0	774.7		513.1	514.3	512.8		12.7	63.5	162.0	95.2	139.7
24“	24.0	36.00		24.25	24.25	24.19		0.50	2.75	6.62	4.19	6.00
	609.6	914.4		615.9	615.9	614.4		12.7	69.8	168.1	106.4	152.4

*1 = Refer to ANSI B36.10 / B36.19 or as specified by purchaser

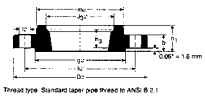
Note: Socket weld flanges up to 3“ in this presssure rating



LAP JOINT

BLIND

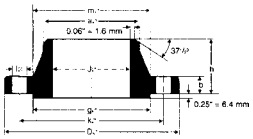
SOCKET WELD



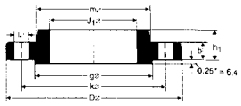
THREADED

	Hub		Raised Face	Drilling Template			Approx Weight					
h3 in. mm	a in. mm	m in. mm	g in. mm	Num ber	l in. mm	k in. mm	W/N lbs kg	S/O lbs kg	L/J lbs kg	Blind lbs kg	S/W lbs kg	Thrd lbs kg
0.62	0.84	1.50	1.38	4	0.62	2.62	1.7	1.4	1.4	1.40	1.50	1.40
15.7	21.3	38.1	35.0		15.7	66.5	0.75	0.64	0.62	0.64	0.66	0.64
0.62	1.05	1.88	1.69	4	0.75	3.25	2.8	2.5	2.4	2.40	2.50	2.50
15.7	26.7	47.7	42.9		19.0	82.5	1.26	1.12	1.10	1.11	1.15	1.12
0.69	1.32	2.12	2.00	4	0.75	3.50	3.5	3.0	2.9	3.10	3.10	3.00
17.5	33.5	53.8	50.8		19.0	88.9	1.52	1.36	1.33	1.39	1.40	1.36
0.81	1.66	2.50	2.50	4	0.75	3.88	4.5	3.7	3.6	3.90	3.90	3.70
20.5	42.2	63.5	63.5		19.0	98.5	2.03	1.68	1.65	1.79	1.75	1.68
0.88	1.90	2.75	2.88	4	0.88	4.50	6.4	5.5	5.4	5.90	5.60	5.50
22.3	48.3	69.8	73.1		22.3	114.3	2.89	2.49	2.44	2.66	2.55	2.49
1.12	2.38	3.31	3.62	8	0.75	5.00	7.5	6.3	6.2	7.00	6.5	6.30
28.4	60.4	84.0	91.9		19.0	127.0	3.40	2.87	2.83	3.18	2.93	2.87
1.25	2.88	3.94	4.12	8	0.88	5.88	11.4	9.5	9.4	10.70	9.70	9.50
31.7	73.1	100.0	104.6		22.3	149.3	5.17	4.32	4.25	4.85	4.40	4.32
1.25	3.50	4.62	5.00	8	0.88	6.62	15.3	12.9	12.7	15.0	13.0	12.90
31.7	88.9	117.3	127.0		22.3	168.1	6.93	5.85	5.78	6.81	3.92	5.85
1.44	4.00	5.25	5.50	8	0.88	7.25	19.1	16.2	16.0	19.2		16.20
36.5	101.6	133.3	139.7		22.3	184.1	8.67	7.34	7.27	8.71		7.34
1.44	4.50	5.75	6.19	8	0.88	7.88	24.7	21.2	21.0	25.3		21.20
36.5	114.3	146.0	157.2		22.3	200.1	11.2	9.61	9.55	11.5		9.61
1.69	5.56	7.00	7.31	8	0.88	9.25	33.3	27.1	26.9	34.4		27.10
42.9	141.2	177.8	185.6		22.3	234.9	15.1	12.3	12.2	15.6		12.30
1.81	6.63	8.12	8.50	12	0.88	10.62	42.4	34.4	34.1	46.0		34.40
45.9	168.4	206.2	215.9		22.3	269.7	19.1	15.6	15.5	20.9		15.60
2.00	8.63	10.25	10.62	12	1.00	13.00	65.9	53.3	53.1	75.6		53.30
50.8	219.2	260.3	269.7		25.4	330.2	29.9	24.2	24.1	34.3		24.20
2.19	10.75	12.62	12.75	16	1.12	15.25	94.1	75.1	75.8	117.0		75.10
55.6	273	320.5	323.8		28.4	387.3	42.7	34.1	34.4	53.3		34.10
2.38	12.75	14.75	15.00	16	1.25	17.75	136	110.0	111.0	174.0		110.00
60.4	323.8	374.6	381.0		31.7	450.8	61.8	49.8	50.4	78.8		49.80
2.50	14.00	16.75	16.25	20	1.25	20.25	189	154.0	156.0	231.0		154.00
63.5	355.6	425.4	412.7		31.7	514.3	85.8	69.9	70.9	105.0		69.9
2.69	16.00	19.00	18.50	20	1.38	22.5	234	194.0	197.0	302.0		194.00
68.3	406.4	482.6	469.9		35.0	571.5	106	88.1	89.5	137.0		88.10
2.75	18.00	21.00	21.00	24	1.38	24.75	289	240.0	245.0	386.0		240.0
69.8	457.2	533.4	533.4		35.0	628.6	131	109.0	111.0	175.0		109.0
2.88	20.00	23.12	23.00	24	1.38	27.00	348	295.0	302.0	487.0		295.0
73.1	508	587.2	584.2		35.0	685.8	158	134.0	137.0	221.0		134.0
3.25	24.00	27.62	27.25	24	1.62	32.00	507	443.0	449.0	747.0		443.0
82.5	609.6	701.5	692.1		41.1	812.8	230	201.0	204.0	339.0		201.0

Flanges 400lb/sq.in.
ANSI B16-5



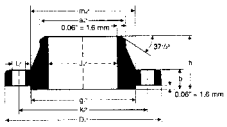
WELDING NECK



SLIP-ON

Pipe		Flange										
Nom. Size	O.D. in. mm	D in. mm	J in. mm	J1 in. mm	J2 in. mm	J3 in. mm	p in. mm	r in. mm	b in. mm	h in. mm	h1 in. mm	h2 in. mm
1/2“	0.84											
	21.3											
3/4“	1.05											
	26.7											
1“	1.315											
	33.4											
1 1/4“	1.66					USE 600LB DIMENSIONS FOR THE SIZES						
	42.2											
1 1/2“	1.90											
	48.3											
2“	2.375											
	60.3											
2 1/2“	2.875											
	73.0											
3“	3.50											
	88.9											
3 1/2“	4.00											
	101.6											
4“	4.50	10.00		4.57	4.60	4.63		0.44	1.38	3.50	2.00	2.00
	114.3	254.0		116.1	116.8	117.6		11.2	35.1	88.9	50.8	50.8
5“	5.563	11.00		5.66	5.69	5.69		0.44	1.50	4.00	2.12	2.12
	141.3	279.4		143.8	144.5	144.5		11.2	38.1	101.6	53.8	53.8
6“	6.625	12.50		6.72	6.75	6.75		0.50	1.62	4.06	2.25	2.25
	168.3	317.5		170.7	171.5	171.5		12.7	41.1	103.1	57.2	57.2
8“	8.625	15.00		8.72	8.75	8.75		0.50	1.88	4.62	2.69	2.69
	219.1	381.0		221.5	222.3	222.3		12.7	47.8	117.3	68.3	68.3
10“	10.75	17.50		10.88	10.92	10.88		0.50	2.12	4.88	2.88	4.00
	273	444.5		276.4	277.4	276.4		12.7	53.8	124.0	73.2	101.6
12“	12.75	20.50		12.88	12.92	12.94		0.50	2.25	5.38	3.12	4.25
	323.8	520.7		327.2	328.2	328.7		12.7	57.2	136.7	79.2	108.0
14“	14.0	23.00		14.14	14.18	14.19		0.50	2.38	5.88	3.31	4.62
	355.6	584.2		359.2	360.2	360.4		12.7	60.5	149.4	84.1	117.3
16“	16.0	25.50		16.16	16.19	16.19		0.50	2.50	6.00	3.69	5.00
	406.4	647.7		410.5	411.2	411.2		12.7	63.5	152.4	93.7	127.0
18“	18.0	28.00		18.18	18.2	18.19		0.50	2.62	6.50	3.88	5.38
	457.2	711.2		461.8	462.3	462.0		12.7	66.5	165.1	98.6	136.7
20“	20.0	30.50		20.20	20.25	20.19		0.50	2.75	6.62	4.00	5.75
	508.0	774.7		513.1	514.4	512.8		12.7	69.9	168.1	101.6	146.1
24“	24.0	36.00		24.25	24.25	24.19		0.50	3.00	6.88	4.50	6.25
	609.6	914.4		616.0	616.0	614.4		12.7	76.2	174.8	114.3	158.8

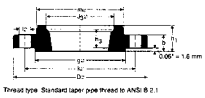
Note: Socket weld flanges are not available in this pressure rating.



LAP JOINT

BLIND

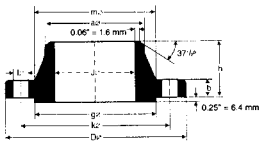
SOCKET WELD



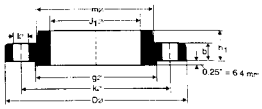
THREADED

	Hub		Raised Face	Drilling Template			Approx Weight					
h in. mm	a in. mm	m in. mm	g in. mm	Num ber	l in. mm	k in. mm	W/N lbs kg	S/O lbs kg	L/J lbs kg	Blind lbs kg	S/W lbs kg	Thrd lbs kg
					USE 600LB DIMENSIONS FOR THESE SIZES							
1.44	4.50	5.75	6.19	8	1.00	7.88	28.2	24.4	24.0	30.2		24.4
36.6	114.3	146.1	157.2		25.4	200.2	12.8	11.1	10.9	13.7		11.1
1.69	5.56	7.00	7.31	8	1.00	9.25	37.2	30.6	30.2	40.7		30.6
42.9	141.2	177.8	185.7		25.4	235.0	16.9	13.9	13.7	18.5		13.7
1.81	6.63	8.12	8.50	12	1.00	10.62	48.5	40.3	39.6	56.2		40.3
46.0	168.4	206.2	215.9		25.4	269.7	22.0	18.3	18.0	25.5		18.3
2.00	8.63	10.25	10.62	12	1.12	13.00	76.4	63.0	62.3	93.8		63.0
50.8	219.2	260.4	269.7		28.4	330.2	34.7	28.6	28.3	42.6		28.6
2.19	10.75	12.62	12.75	16	1.25	15.25	107	86.3	85.5	142		86.3
55.6	273.1	320.5	323.9		31.8	387.4	48.5	39.2	38.8	64.5		39.2
2.38	12.75	14.75	15.00	16	1.38	17.75	153	126	125	208		126
60.5	323.9	374.7	381.0		35.1	450.9	69.6	57.0	56.6	94.3		57.0
2.50	14.00	16.75	16.25	20	1.38	20.25	210	174	173	273		174
63.5	355.6	425.5	412.8		35.1	514.4	95.5	79.1	78.6	124		79.1
2.69	16.00	19.00	18.50	20	1.50	22.50	260	223	220	357		223
68.3	406.4	482.6	469.9		38.1	571.5	118	101	100	162		101
2.75	18.00	21.00	21.00	24	1.50	24.75	319	271	269	452		271
69.9	457.2	533.4	533.4		38.1	628.7	145	123	122	205		123
2.88	20.00	23.12	23.00	24	1.62	27.00	381	322	319	560		322
73.2	508.0	587.2	584.2		41.1	685.8	173	146	145	254		146
3.25	24.00	27.62	27.25	24	1.88	32.00	549	482	478	850		482
82.6	609.6	701.5	692.2		47.8	812.8	249	219	217	386		219

Flanges 600lb/sq.in.
ANSI B16-5



WELDING NECK

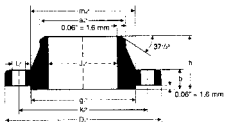


SLIP-ON

Pipe		Flange											
Nom. Size	O.D. in. mm	D in. mm	J in. mm	J1 in. mm	J2 in. mm	J3 in. mm	p in. mm	r in. mm	b in. mm	h in. mm	h1 in. mm	h in. mm
1/2“	0.84	3.75	*1 = Refer to ANSI B36-10 / B36-19 or as specified by purchaser	0.88	0.90	0.93	0.38	0.12	0.56	2.06	0.88	0.88
	21.3	95.3		22.4	22.9	23.6	9,60	3.0	14.2	52.3	22.4	22.4
3/4“	1.05	4.62		1.09	1.11	1.14	0.44	0.12	0.62	2.25	1.00	1.00
	26.7	117.3		27.7	28.2	29.0	11.11	3.0	15.7	57.2	25.4	25.4
1“	1.315	4.88		1.36	1.38	1.41	0.50	0.12	0.69	2.44	1.06	1.06
	33.4	124.0		34.5	35.1	35.8	12.7	3.0	17.5	62.0	26.9	26.9
1 1/4“	1.66	5.25		1.70	1.72	1.75	0.56	0.19	0.81	2.62	1.12	1.12
	42.2	133.4		43.2	43.7	44.5	14.2	4.8	20.6	66.5	28.4	28.4
1 1/2“	1.90	6.12		1.95	1.97	1.99	0.62	0.25	0.88	2.75	1.25	1.25
	48.3	155.4		49.5	50.0	50.5	15.7	6.4	22.4	69.9	31.8	31.8
2“	2.375	6.50		2.44	2.46	2.50	0.69	0.31	1.00	2.88	1.44	1.44
	60.3	165.1		62.0	62.5	63.5	17.5	7.9	25.4	73.2	36.6	36.6
2 1/2“	2.875	7.50		2.94	2.97	3.00	0.75	0.31	1.12	3.12	1.62	1.62
	73.0	190.5		74.7	75.4	76.2	19.0	7.9	28.4	79.2	41.1	41.1
3“	3.50	8.25		3.57	3.60	3.63	0.81	0.38	1.25	3.25	1.81	1.81
	88.9	209.6		90.7	91.4	92.2	20.6	9.7	31.8	82.6	46.0	46.0
3 1/2“	4.00	9.00		4.07	4.10	4.13		0.38	1.38	3.38	1.94	1.94
	101.6	228.6		103.4	104.1	104.9		9.7	35.1	85.9	49.3	49.3
4“	4.50	10.75		4.57	4.60	4.63		0.44	1.50	4.00	2.12	2.12
	114.3	273.1		116.1	116.8	117.6		11.2	38.1	101.6	53.8	53.8
5“	5.563	13.00		5.66	5.69	5.69		0.44	1.75	4.50	2.38	2.38
	141.3	330.2		143.8	144.5	144.5		11.2	44.5	114.3	60.5	60.5
6“	6.625	14.00		6.72	6.75	6.75		0.50	1.88	4.62	2.62	2.62
	168.3	355.6		170.7	171.5	171.5		12.7	47.8	117.3	66.5	66.5
8“	8.625	16.50		8.72	8.75	8.75		0.50	2.19	5.25	3.00	3.00
	219.1	419.1		221.8	222.3	222.3		12.7	55.6	133.4	76.2	76.2
10“	10.75	20.00		10.88	10.92	10.88		0.50	2.50	6.00	3.38	4.38
	273	508.0		276.4	277.4	276.4		12.7	63.5	152.4	85.9	111.3
12“	12.75	22.00		12.88	12.92	12.94		0.50	2.62	6.12	3.62	4.62
	323.8	558.8		327.2	328.2	328.7		12.7	66.5	155.4	91.9	117.3
14“	14.0	23.75		14.14	14.18	14.19		0.50	2.75	6.50	3.69	5.00
	355.6	603.3		359.2	360.2	360.4		12.7	69.9	165.1	93.7	127.0
16“	16.0	27.00		16.16	16.19	16.19		0.50	3.00	7.00	4.19	5.50
	406.4	685.8		410.5	411.2	411.2		12.7	76.2	177.8	106.4	139.7
18“	18.0	29.25		18.18	18.20	18.19		0.50	3.25	7.25	4.62	6.00
	457.2	743.0		461.8	462.3	462.0		12.7	82.6	184.2	117.3	152.4
20“	20.0	32.00		20.20	20.25	20.19		0.50	3.50	7.50	5.00	6.50
	508.0	812.8		513.1	514.4	512.8		12.7	88.9	190.5	127.0	165.1
24“	24.0	37.00		24.25	24.25	24.19		0.50	4.00	8.00	5.50	7.25
	609.6	939.8		616.0	616.0	614.4		12.7	101.6	203.2	139.7	184.2

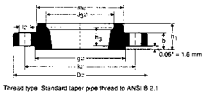
Note: Socket weld flanges up to 3“ in this presssure rating

Flanges 600 lb/sq.in.
ANSI B16-5

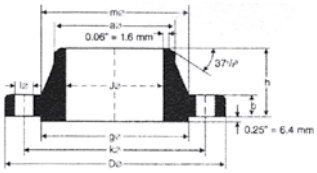

LAP JOINT

BLIND

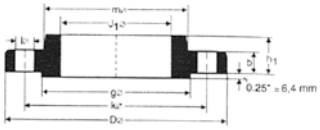
SOCKET WELD


THREADED

	Hub		Raised Face		Drilling Template							Approx. Weight	
h in. mm	a in. mm	m in. mm	g in. mm	Num- ber	l in. mm	k in. mm	W/N lbs kg	S/O lbs kg	L/J lbs kg	Blind lbs kg	S/W lbs kg	Thrd lbs kg
0.62	0.84	1.50	1.38	4	0.62	2.62	1.9	1.6	1.6	1.7	1.7	1.6
15.7	21.3	38.1	35.1		15.7	66.5	0.87	0.74	0.72	0.76	0.76	0.74
0.62	1.05	1.88	1.69	4	0.75	3.25	3.2	2.8	2.8	2.8	2.8	2.8
15.7	26.7	47.8	42.9		19.1	82.6	1.45	1.27	1.25	1.28	1.29	1.27
0.69	1.32	2.12	2.00	4	0.75	3.50	3.9	3.3	3.3	3.5	3.4	3.3
17.5	33.5	53.8	50.8		19.1	88.9	1.76	1.52	1.50	1.60	1.55	1.52
0.81	1.66	2.50	2.50	4	0.75	3.88	5.5	4.5	4.4	4.9	4.5	4.5
20.6	42.2	63.5	63.5		19.1	98.6	2.49	2.03	2.00	2.23	2.06	2.03
0.88	1.90	2.75	2.88	4	0.88	4.50	7.7	6.5	6.4	7.2	6.60	6.5
22.4	48.3	69.9	73.2		22.4	114.3	3.49	2.96	2.92	3.25	3.00	2.96
1.12	2.38	3.31	3.62	8	0.75	5.00	9.6	8.0	7.8	9.1	8.1	8.0
28.4	60.5	84.1	91.9		19.1	127.0	4.36	3.62	3.55	4.15	3.67	3.62
1.25	2.88	3.94	4.12	8	0.88	5.88	14.2	11.6	11.5	13.5	11.8	11.6
31.8	73.2	100.1	104.6		22.4	149.4	6.43	5.28	5.23	6.13	5.35	5.28
1.38	3.50	4.62	5.00	8	0.88	6.60	18.8	15.4	15.3	18.6	15.6	15.4
35.1	88.9	117.3	127.0		22.4	168.1	8.53	7.00	6.95	8.44	7.06	7.00
1.56	4.00	5.25	5.50	8	1.00	7.25	23.6	19.5	19.3	24.2		19.5
39.6	101.6	133.4	139.7		25.4	184.2	10.7	8.84	8.78	11.0		8.84
1.62	4.50	6.00	6.19	8	1.00	8.50	38.3	31.9	31.7	38.1		31.9
41.1	114.3	152.4	157.2		25.4	215.9	17.4	14.5	14.4	17.3		14.5
1.88	5.56	7.44	7.31	8	1.12	10.50	64.3	53.7	53.5	64.8		53.7
47.8	141.2	189.0	185.7		28.4	266.7	29.2	24.4	24.3	29.4		24.4
2.00	6.63	8.75	8.50	12	1.12	11.50	76.9	63.2	62.8	79.5		63.2
50.8	168.4	222.3	215.9		28.4	292.1	34.9	28.7	28.5	36.1		28.7
2.25	8.63	10.75	10.62	12	1.25	13.75	119	95.6	94.9	130		95.6
57.2	219.2	273.1	269.7		31.8	349.3	53.9	43.4	43.1	58.9		43.4
2.56	10.75	13.50	12.75	16	1.38	17.00	191	155	155	215		155
65.0	273.1	342.9	323.9		35.1	431.8	86.5	70.3	70.5	97.5		70.3
2.75	12.75	15.75	15.00	20	1.38	19.25	227	186	190	273		186
69.9	323.9	400.1	381.0		35.1	489.0	103	84.2	86.1	124		84.2
2.88	14.00	17.00	16.25	20	1.50	20.75	269	217	220	333		217
73.2	355.6	431.8	412.8		38.1	527.1	122	98.7	100	151		98.7
3.06	16.00	19.50	18.50	20	1.62	23.75	374	313	319	471		313
77.7	406.4	495.3	469.9		41.1	603.3	170	142	145	214		142
3.12	18.00	21.50	21.00	20	1.75	25.75	449	381	390	599		381
79.2	457.2	546.1	533.4		44.5	654.1	204	173	177	272		173
3.25	20.00	24.00	23.00	24	1.75	28.50	560	485	496	769		485
82.6	508.0	609.6	584.2		44.5	723.9	254	220	225	349		220
3.62	24.00	28.25	27.25	24	2.00	33.00	789	687	700	1174		687
91.9	609.6	717.6	692.2		50.8	838.2	358	312	318	533		312



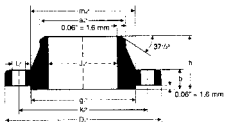
WELDING NECK



SLIP-ON

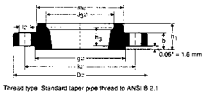
Pipe		Flange										
Nom. Size	OD in. mm	D in. mm	J in. mm	J1 in. mm	J2 in. mm	J3 in. mm	p in. mm	r in. mm	b in. mm	h in. mm	h1 in. mm	h2 in. mm
1/2“	0.84		Refer to ANSI B36-10/ B36-19 or as specified by purchaser									
	21.3											
3/4“	1.05											
	26.7											
1“	1.315											
	33.4											
1.1/4“	1.66				USE 1500LB DIMENSIONS FOR THESE SIZES							
	42.2											
1.1/2“	1.90											
	48.3											
2“	2.375											
	60.3											
2.1/2“	2.875											
	73.0											
3“	3.50	9.50		3.57	3.60	3.63		0.38	1.50	4.00	2.12	2.12
	88.9	241.3		90.7	91.4	92.2		9.6	38.1	101.6	53.8	53.8
4“	4.50	11.50		4.57	4.66	4.63		0.44	1.75	4.50	2.75	2.75
	114.3	292.1		116.1	116.8	117.6		11.1	44.4	114.3	69.8	69.8
5“	5.563	12.75		5.66	5.69	5.63		0.44	2.00	5.00	3.12	3.12
	141.3	349.2		143.8	144.5	144.5		11.1	50.8	127.0	79.2	79.2
6“	6.625	15.00		6.72	6.75	6.75		0.50	2.19	5.50	3.38	3.38
	168.3	381.0		170.7	171.4	171.4		12.7	55.6	139.7	85.8	85.8
8“	8.625	18.50		8.72	8.75	8.75		0.50	2.50	6.38	4.00	4.50
	219.1	469.9		221.5	222.2	222.2		12.7	63.5	162.0	101.6	114.3
10“	10.75	21.50		10.88	10.92	10.88		0.50	2.75	7.25	4.25	5.00
	273	546.1		276.3	277.4	276.3		12.7	69.8	184.1	107.9	127.0
12“	12.75	24.00		12.88	12.92	12.94		0.50	3.12	7.88	4.62	5.62
	323.8	609.6		327.1	328.2	328.7		12.7	79.2	200.1	117.3	142.7
14“	14.0	25.25		14.14	14.18	14.19		0.50	3.38	8.38	5.12	6.12
	355.6	641.3		359.1	360.2	360.4		12.7	85.8	212.8	130.0	155.4
16“	16.0	27.75		16.16	16.19	16.19		0.50	3.50	8.50	5.25	6.50
	406.4	704.8		410.5	411.2	411.2		12.7	88.9	215.9	133.3	165.1
18“	18.0	31.00		18.18	18.20	18.19		0.50	4.00	9.00	6.00	7.50
	457.2	787.4		461.8	462.3	462.0		12.7	101.6	228.6	152.4	190.5
20“	20.0	33.75		20.20	20.25	20.19		0.50	4.25	9.75	6.25	8.25
	508.0	857.2		513.1	514.3	512.8		12.7	107.9	247.6	158.7	209.5
24“	24.0	41.00		24.25	24.25	24.19		0.50	5.50	11.50	8.00	10.50
	609.6	1041.4		615.9	615.9	614.4		12.7	139.7	292.1	203.2	266.7

Note: Socket weld flanges are not available in the pressure rating


LAP JOINT

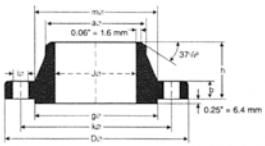
BLIND

SOCKET WELD

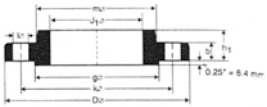

THREADED

	Hub		Raised Face	Drilling Template			Approx. Weight					
h3 in. mm	a in. mm	m in. mm	g in. mm	Num- ber	l in. mm	k in. mm	W/N lbs kg	S/O lbs kg	L/J lbs kg	Blind lbs kg	S/W lbs kg	Thrd lbs kg
					USE 1500LB DIMENSIONS FOR THESE SIZES							
1.62	3.50	5.00	5.00	8	1.00	7.50	30.2	25.6	24.9	28.9		25.6
41.1	88.9	127.0	127.0		25.4	190.5	13.7	11.6	11.3	13.1		11.6
1.88	4.50	6.25	6.19	8	1.25	9.25	49.6	43.4	42.3	59.3		43.4
47.8	114.3	158.7	157.2		31.7	234.9	22.5	19.7	19.2	26.9		19.7
2.12	5.56	7.50	7.31	8	1.38	11.00	82.4	70.3	68.7	80.4		70.3
53.8	141.2	190.5	185.6		35.0	279.4	37.4	31.9	31.2	36.5		31.9
2.25	6.63	9.25	8.50	12	1.25	12.50	105	90.5	89.2	104		90.5
57.1	168.4	234.9	215.9		31.7	317.5	47.7	41.1	40.5	47.4		41.1
2.50	8.63	11.75	10.62	12	1.50	15.50	179	156	158	182		156
63.5	219.2	298.4	269.7		38.1	393.7	81.3	70.7	71.5	82.5		70.7
2.81	10.75	14.50	12.75	16	1.50	18.50	262	223	229	269		223
71.4	273	368.3	323.8		38.1	469.9	119	101	104	122		101
3.00	12.75	16.50	15.00	20	1.50	21.00	346	293	306	381		293
76.2	323.8	419.1	381.0		38.1	533.4	157	133	139	173		133
3.25	14.00	17.75	16.25	20	1.62	22.00	379	337	355	454		337
82.5	355.6	450.8	412.7		41.1	558.8	180	153	161	206		153
3.38	16.00	20.00	18.50	20	1.75	24.25	478	408	427	571		408
85.9	406.4	508.0	469.9		44.4	615.9	217	185	194	259		185
3.50	18.00	22.25	21.00	20	2.00	27.00	643	568	588	808		568
88.9	457.2	565.1	533.4		50.8	685.8	292	258	267	367		258
3.62	20.00	24.50	23.00	20	2.12	29.50	797	698	736	1020		698
91.9	508	622.3	584.2		53.8	749.3	362	317	334	463		317
4.00	24.00	29.50	27.25	20	2.62	35.50	1465	1335	1361	1930		1335
101.6	609.6	749.3	692.1		66.5	901.7	665	606	618	876		606

Flanges 1500lb/sq.in.
ANSI B16-5



WELDING NECK

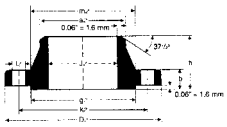


SLIP-ON

Pipe		Flange										
Nom. Size	OD in. mm	D in. mm	J in. mm	J1 in. mm	J2 in. mm	J3 in. mm	p in. mm	r in. mm	b in. mm	h in. mm	h1 in. mm	h2 in. mm
1/2“	0.84	4.75	Refer to ANSI B36-10/ B36-19 or as specified by purchaser	0.88	0.90	0.93	0.38	0.12	0.88	2.38	1.25	1.25
	21.3	12.6		22.3	22.9	23.6	9.6	3.0	22.3	60.4	31.7	31.7
3/4“	1.05	5.12		1.09	1.11	1.14	0.44	0.12	1.00	2.75	1.38	1.38
	26.7	130.0		27.7	28.2	29.0	11.1	3.0	25.4	69.8	35.0	35.0
1“	1.315	5.88		1.36	1.38	1.41	0.50	0.12	1.12	2.88	1.62	1.62
	33.4	149.3		34.5	35.0	35.8	12.7	3.0	28.4	73.1	41.1	41.1
1.1/4“	1.66	6.25		1.70	1.72	1.75	0.56	0.19	1.12	2.88	1.62	1.62
	42.2	158.7		43.2	43.7	44.4	14.2	4.8	28.4	73.1	41.1	41.1
1.1/2“	1.90	7.00		1.95	1.97	1.99	0.62	0.25	1.25	3.25	1.75	1.75
	48.3	177.8		49.5	50.0	50.5	15.7	6.4	31.7	82.5	44.5	44.5
2“	2.375	8.50		2.44	2.46	2.50	0.69	0.31	1.50	4.00	2.25	2.25
	60.3	215.9		62.0	62.5	63.5	17.5	7.8	38.1	101.6	57.1	57.1
2.1/2“	2.875	9.62		2.94	2.97	3.00	0.75	0.31	1.62	4.12	2.50	2.50
	73.0	244.3		74.7	75.4	76.2	19.0	7.8	41.1	104.6	63.5	63.5
3“	3.50	10.50			3.60	3.63		0.38	1.88	4.62	2.88	2.88
	88.9	266.7			91.4	92.2		9.6	47.7	117.3	73.15	73.15
4“	4.50	12.25			4.60	4.63		0.44	2.12	4.88	3.56	3.56
	114.3	311.1			116.8	117.6		11.1	53.8	123.9	90.42	90.42
5“	5.563	14.75			5.69	5.69		0.44	2.88	6.12	4.12	4.12
	141.3	374.6			144.5	144.5		11.1	73.1	155.4	104.65	104.65
6“	6.625	15.50			6.75	6.75		0.50	3.25	6.75	4.69	4.69
	168.3	393.7			171.4	171.4		12.7	82.5	171.4	119.13	119.13
8“	8.625	19.00			8.75	8.75		0.50	3.62	8.38	5.62	5.62
	219.1	482.6			222.2	222.2		12.7	91.9	212.8	142.75	142.75
10“	10.75	23.00			10.92	10.88		0.50	4.25	10.00	6.25	7.00
	273	584.2			277.4	276.3		12.7	107.9	254.0	158.75	177.8
12“	12.75	26.50			12.92	12.94		0.50	4.88	11.12	7.12	8.62
	323.8	673.1			328.2	328.7		12.7	123.9	282.4	180.85	218.9
14“	14.0	29.50			14.8			0.50	5.25	11.75		9.50
	355.6	749.3			360.2			12.7	133.3	298.4		241.3
16“	16.0	32.50			16.19			0.50	5.75	12.25		10.25
	406.4	825.5			411.2			12.7	146.0	311.1		260.3
18“	18.0	36.00			18.20			0.50	6.38	12.88		10.88
	457.2	914.4			462.3			12.7	162.0	327.1		276.3
20“	20.0	38.75			20.25			0.50	7.00	14.00		11.50
	508.0	984.2			514.3			12.7	177.8	355.6		292.1
24“	24.0	46.00			24.25			0.50	8.00	16.00		13.00
	609.6	1168.4			615.9			12.7	203.2	406.4		330.2

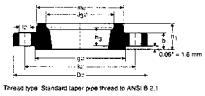
Note: Slip-on and socket weld flanges up to 2.1/2“ in this pressure rating
Threaded flanges up to 12“ in this pressure rating

Flanges 1500lb/sq.in.
ANSI B16-5

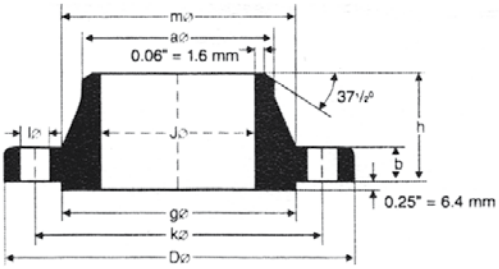

LAP JOINT

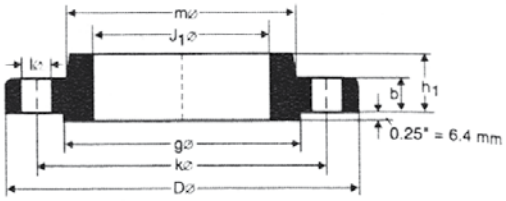
BLIND

SOCKET WELD


THREADED

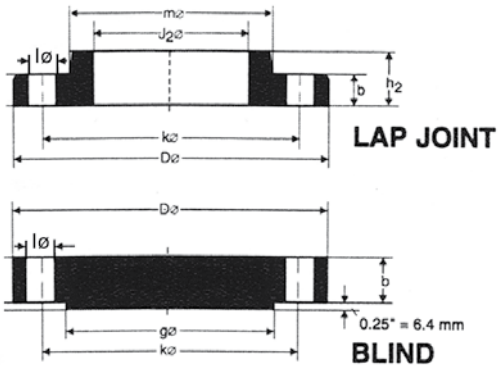
	Hub		Raised Face	Drilling Template			Approx. Weight					
h3 in. mm	a in. mm	m in. mm	g in. mm	Num-ber	l in. mm	k in. mm	W/N lbs kg	S/O lbs kg	L/J lbs kg	Blind lbs kg	S/W lbs kg	Thrd lbs kg
0.88	0.84	1.50	1.38	4	0.88	3.25	4.1	3.8	3.8	3.9	4.0	3.9
22.3	21.3	38.1	35.0		22.3	82.5	1.87	1.74	1.71	1.77	1.80	1.74
1.00	1.05	1.75	0.69	4	0.88	3.50	5.6	5.2	5.1	5.3	5.3	5.2
25.4	26.7	44.4	42.9		22.3	88.9	2.56	2.34	2.30	2.42	2.41	2.34
1.12	1.32	2.06	2.00	4	1.00	4.00	8.2	7.6	7.5	7.9	7.8	7.6
28.4	33.4	52.3	50.8		25.4	101.6	3.74	3.44	3.40	3.57	3.55	3.44
1.19	1.66	2.50	2.50	4	1.00	4.38	9.5	8.6	8.4	9.1	8.9	8.6
30.2	42.2	63.5	63.5		25.4	111.2	4.33	3.91	3.85	4.14	4.02	3.91
1.25	1.90	2.75	2.88	4	1.12	4.88	13.1	11.8	11.6	12.7	12.0	11.8
31.7	48.3	69.8	73.1		28.4	123.9	5.94	5.36	5.28	5.75	5.45	5.36
1.50	2.38	4.12	3.62	8	1.00	6.50	23.8	21.7	21.5	22.2	22.5	21.7
33.1	60.3	104.6	91.9		25.4	165.1	10.8	9.85	9.78	10.1	10.2	9.85
1.88	2.88	4.88	4.12	8	1.12	7.50	33.0	30.2	30.0	30.8	30.6	30.2
47.7	73.0	123.9	104.6		28.4	190.5	15.0	13.7	13.6	14.0	13.9	13.7
2.00	3.50	5.25	5.00	8	1.25	8.00	43.8		39.2	42.1		39.4
50.8	88.9	133.3	127.0		31.7	203.2	19.9		17.8	19.1		17.9
2.25	4.50	6.38	6.19	8	1.38	9.50	65.9		60.6	65.9		61.2
57.1	114	162.0	157.2		35.0	241.3	29.9		27.5	29.9		27.8
2.50	5.56	7.75	7.31	8	1.62	11.50	122		113	129		114
63.5	141.2	196.8	185.6		41.1	292.1	55.4		51.5	58.4		51.8
2.75	6.63	9.00	8.50	12	1.50	12.50	151		137	158		134
69.8	168.4	228.6	215.9		38.1	317.5	68.4		62.0	71.8		61.0
3.00	8.63	11.50	10.62	12	1.75	15.50	258		231	269		227
76.2	219.2	292.1	269.7		44.4	393.7	117		105	122		103
3.31	10.75	14.50	12.75	12	2.00	19.00	427		304	463		386
84.0	273	368.3	323.8		50.8	482.6	194		179	210		175
3.62	12.75	17.75	15.00	16	2.12	22.50	634		593	696		582
91.9	323.8	450.8	381.0		53.8	571.5	288		269	316		264
	14.00	19.50	16.25	16	2.38	25.00	837		804	925		
	355.6	495.3	412.7		60.4	635.0	380		365	420		
	16.00	21.75	18.50	16	2.62	27.75	1068		1011	1229		
	406.4	552.4	469.9		66.5	704.8	485		459	558		
	18.00	23.50	21.00	16	2.88	30.50	1419		1317	1674		
	457.2	596.9	533.4		73.1	774.7	644		598	760		
	20.00	25.25	23.00	16	3.12	32.75	1707		1568	2126		
	508	641.3	584.2		79.2	831.8	775		712	965		
	24.00	30.00	27.25	16	3.62	39.00	2714		2401	3432		
	609.6	762.0	692.1		91.9	990.6	1232		1090	1558		

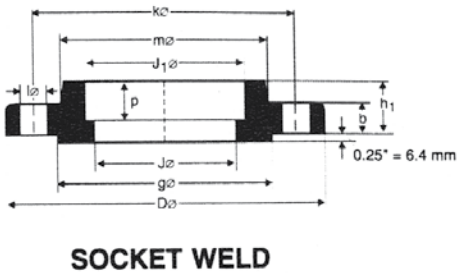




Pipe		Flange										
Nom. Size	OD in. mm	D in. mm	J in. mm *	J1 in. mm	J2 in. mm	J3 in. mm	p in. mm	r in. mm	b in. mm	h in. mm	h1 in. mm	h2 in. mm
_“	0.84	5.25	Refer to ANSI B36-10/ B36-19 or as specified by purchaser		0.90	0.93		0.12	1.19	2.88	1.56	1.56
	21.3	133.4			22.9	23.6		3.0	30.2	73.2	39.6	39.6
_“	1.05	5.50			1.11	1.14		0.12	1.25	3.12	1.69	1.69
	26.7	139.7			28.2	29.0		3.0	31.8	79.2	42.9	42.9
1“	1.315	6.25			1.38	1.41		0.12	1.38	3.50	1.88	1.88
	33.4	158.8			35.1	35.8		3.0	35.1	88.9	47.8	47.8
1 _“	1.66	7.25			1.72	1.75		0.19	1.50	3.75	2.06	2.00
	42.2	184.2			43.7	44.5		4.8	38.1	95.3	52.3	52.3
1 _“	1.90	8.00			1.97	1.99		0.25	1.75	4.38	2.38	2.38
	48.3	203.2			50.0	50.5		6.4	44.5	111.3	60.5	60.5
2“	2.375	9.25			2.46	2.50		0.31	2.00	5.00	2.75	2.75
	60.3	235.0			62.5	63.5		7.9	50.8	127.0	69.9	69.9
2 _“	2.875	10.50			2.97	3.00		0.31	2.25	5.62	3.12	3.12
	73.0	266.7			75.4	76.2		7.9	57.2	142.7	79.2	79.2
3“	3.50	12.00			3.60	3.63		0.38	2.62	6.62	3.62	3.62
	88.9	304.8			91.4	92.2		9.7	66.5	168.1	91.9	91.9
4“	4.50	14.00			4.60	4.63		0.44	3.00	7.50	4.25	4.25
	114.3	355.6			116.8	117.6		11.2	76.2	190.5	108.0	108.0
5“	5.563	16.50			5.69	5.69		0.44	3.62	9.00	5.12	5.12
	141.3	419.1			144.5	144.5		11.2	91.9	228.6	130.0	130.0
6“	6.625	19.00			6.75	6.75		0.50	4.25	10.75	6.00	6.00
	168.3	482.6			171.5	171.5		12.7	108.0	273.1	152.4	152.4
8“	8.625	21.75			8.75	8.75		0.50	5.00	12.50	7.00	7.00
	219.1	552.5			222.3	222.3		12.7	127.0	317.5	177.8	177.8
10“	10.75	26.50			10.92	10.88		0.50	6.50	16.50	9.00	9.00
	273	673.1			277.4	276.4		12.7	165.1	419.1	228.6	228.6
12“	12.75	30.00			12.92	12.94		0.50	7.25	18.25	10.00	10.00
	323.8	762.0			328.2	328.7		12.7	184.2	463.6	254.0	254.0

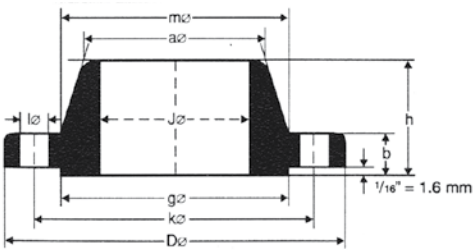
Note: Slip-on and Socket weld flanges are not available in this pressure rating.
Weld necks, Lap joint, Blind and Threaded flanges up to 12“ in this pressure rating.





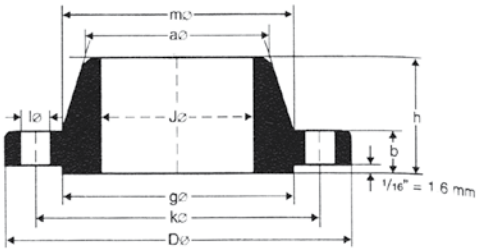
	Hub		Raised Face	Drilling Template					Approx. Weight			
h3 in. mm	a in. mm	m in. mm	g in. mm	Num- ber	l in. mm	k in. mm	W/N lbs kg	S/O lbs kg	L/J lbs kg	Blind lbs kg	S/W lbs kg	Thrd lbs kg
1.12	0.84	1.69	1.38	4	0.88	3.50	6.9		6.4	6.6		6.5
28.4	21.3	42.9	35.1		22.4	88.5	3.12		2.92	2.99		2.95
1.25	1.05	2.00	1.69	4	0.88	3.75	8.1		7.5	7.7		7.6
31.8	26.7	50.8	42.9		22.4	95.3	3.70		3.40	3.50		3.44
1.38	1.32	2.25	2.00	4	1.00	4.25	11.5		10.5	10.9		10.6
35.1	33.5	57.2	50.8		25.4	108.0	5.24		4.77	4.96		4.82
1.50	1.66	2.88	2.50	4	1.12	5.12	17.0		15.6	16.2		15.7
38.1	42.2	73.2	63.5		28.4	130.0	7.74		7.08	7.35		7.14
1.75	1.90	3.12	2.88	4	1.25	5.75	24.0		21.9	22.9		22.0
44.5	48.3	79.2	73.2		31.8	146.1	10.9		9.93	10.4		10.0
2.00	2.38	3.75	3.62	8	1.12	6.75	35.7		32.4	34.4		32.6
50.8	60.5	95.3	91.9		28.4	171.5	16.2		14.7	15.6		14.8
2.25	2.88	4.50	4.12	8	1.25	7.75	52.2		46.9	49.8		47.4
57.2	73.2	114.3	104.6		31.8	196.9	23.7		21.3	22.6		21.5
2.50	3.50	5.25	5.00	8	1.38	9.00	79.7		71.1	76.7		71.8
63.5	88.9	133.4	127.0		35.1	228.6	36.2		32.3	34.8		32.6
2.75	4.50	6.50	6.19	8	1.62	10.75	122		116	119		117
69.9	114.3	165.1	157.2		41.1	273.1	55.3		52.5	53.9		52.9
3.00	5.56	8.00	7.31	8	1.88	12.75	204		182	200		183
76.2	141.2	203.2	185.7		47.8	323.9	92.5		82.6	90.8		83.1
7.25	6.63	9.25	8.50	8	2.12	14.50	315		280	311		282
82.6	168.4	235.0	215.9		53.8	368.3	143		127	141		128
3.75	8.63	12.00	10.62	12	2.12	17.25	474		410	471		414
95.3	219.2	304.8	269.7		53.8	438.2	215		186	214		188
4.25	10.75	14.75	12.75	12	2.62	21.25	894		775	905		782
108.0	273.1	374.7	323.9		66.5	539.8	406		352	411		355
4.75	12.75	17.38	15.00	12	2.88	24.38	1260		1104	1304		1110
120.7	323.9	441.5	381.0		73.2	619.3	572		501	592		504

150lb/sq.in. Welding Neck Flanges
MSS SP-44



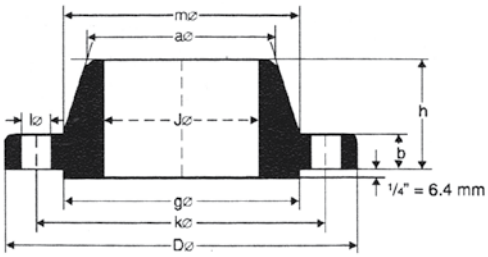
Pipe		Flange				Hub		Raised Face	Drilling Template			Appr. Weight
Nom. Size	OD in. mm	D in. mm	J in. mm	b in. mm	h in. mm	a in. mm	m in. mm	g in mm	Number	l in. mm	k in mm	Pounds Kilo
26“	26.0 660.4	34 _ 869.9	To be specified by purchaser	2 11/16 68.3	4 _ 120.6	To be specified by purchaser	26 5/8 676.3	29 _ 749.3	24	1 3/8 34.9	31 _ 806.4	To be specified by purchaser
28“	28.0 711.2	36 _ 927.1		2 11/16 71.4	415/16 125.4		28 5/8 727.1	31 _ 800.1	28	1 3/8 34.9	34 863.6	
30“	30.0 762.0	38 _ 984.2		2 15/16 74.6	5 3/8 136.5		30 _ 781.0	33 _ 857.2	28	1 3/8 34.9	36 914.4	
32“	32.0 812.8	41 _ 1060.4		3 3/16 81.0	5 11/16 144.5		32 _ 831.8	36 914.4	28	1 5/8 41.3	38 _ 977.9	
34“	34.0 863.6	43 _ 1111.2		3 _ 82.5	5 7/8 149.2		34 _ 882.6	38 965.2	32	1 5/8 41.3	40 _ 1028.7	
36“	36.0 914.4	46 1168.4		3 9/16 90.5	6 3/16 157.2		36 _ 933.4	40 _ 1022.3	32	1 5/8 41.3	42 _ 1085.8	
38“	38.0 965.2	48 _ 1238.2		3 7/16 87.3	6 3/16 157.1		39 990.6	42 _ 1073.1	32	1 5/8 41.3	45 _ 1149.3	
40“	40.0 1016.0	50 _ 1289.0		3 9/16 90.5	6 7/16 163.5		41 1041.4	44 _ 1123.9	36	1 5/8 41.3	47 _ 1200.1	
42“	42.0 1066.8	53 1346.2		3 13/16 96.8	6 _ 171.4		43 1092.2	47 1193.8	36	1 5/8 41.3	49 _ 1257.3	
44“	44.0 1117.6	55 _ 1403.3		4 101.6	7 177.8		45 1143.0	49 1244.6	40	1 5/8 41.3	51 _ 1314.4	
46“	46.0 1168.4	57 _ 1454.1		4 1/16 103.1	7 5/16 185.7		47 1/8 1196.9	51 1295.4	40	1 5/8 41.3	53 _ 1365.2	
48“	48.0 1219.2	59 _ 1511.3		4 _ 107.9	7 9/16 192.0		49 1/8 1247.6	53 _ 1358.9	44	1 5/8 41.3	56 1422.4	
50“	50.0 1270.0	61 _ 1568.4		4 3/8 111.1	8 203.2		51 _ 1301.7	55 _ 1409.7	44	1 7/8 47.7	58 _ 1479.5	
52“	52.0 1320.8	64 1625.6		4 9/16 115.8	8 _ 209.5		53 _ 1352.5	57 _ 1460.5	44	1 7/8 47.7	60 _ 1536.7	
54“	54.0 1371.6	66 _ 1682.7		4 _ 120.6	8 _ 215.9		55 _ 1403.3	59 _ 1511.3	44	1 7/8 47.7	62 _ 1593.8	
56“	56.0 1422.4	68 _ 1746.2		4 7/8 123.8	9 228.6		57 3/8 1457.4	62 1574.8	48	1 7/8 47.7	65 1651.0	
58“	58.0 1473.2	71 1803.4		5 1/16 128.5	9 _ 234.9		59 3/8 1508.2	64 1625.6	48	1 7/8 47.7	67 _ 1708.1	
60“	60.0 1524.0	73 1854.2		5 3/16 131.7	9 7/16 239.7		61 3/8 1559.0	66 1676.4	52	1 7/8 47.7	69 _ 1758.9	

300lb/sq.in. Welding Neck Flanges
MSS SP-44



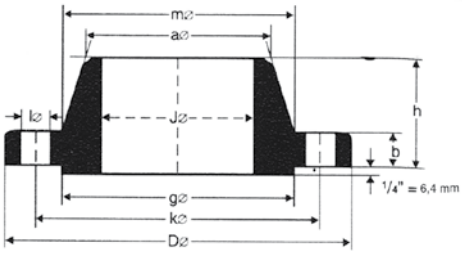
Pipe		Flange				Hub		Raised Face	Drilling Template			Appr. Weight
Nom. Size	OD in. mm	D in. mm	J in. mm*	b in. mm	h in. mm	a in. mm*	m in. mm	g in mm	Number	l in. mm	k in mm	Pounds Kilo *
26“	26.0 660.4	38 _ 971.5	To be specified by purchaser	3 1/8 79.4	7 _ 184.1	To be specified by purchaser	28 3/8 720.7	29 _ 749.3	28	1 _ 44.3	34 _ 876.3	To be specified by purchaser
28“	28.0 711.2	40 _ 1035.0		3 1/8 85.7	7 _ 196.8		30 _ 774.7	31 _ 800.0	28	1 _ 44.4	37 939.8	
30“	30.0 762	43 1092.2		3 5/8 92.1	8 _ 209.5		32 9/16 827.1	33 _ 857.2	28	1 7/8 47.6	39 _ 996.9	
32“	32.0 812.8	45 _ 1149.3		3 7/8 98.4	8 _ 222.2		34 11/16 881.1	36 914.4	28	2 50.8	42 _ 1054.1	
34“	34.0 863.6	47 _ 1206.5		4 101.6	9 1/8 231.8		36 7/8 936.6	38 965.2	28	2 50.8	43 _ 1104.9	
36“	36.0 914.4	50 1270.0		4 1/8 104.8	9 _ 241.3		39 990.6	40 _ 1022.3	32	2 1/8 54	46 1168.4	
38“	38.0 965.2	46 1168.4		4 _ 107.9	7 1/8 180.9		39 1/8 993.7	40 _ 1028.7	32	1 5/8 41.2	43 1092.2	
40“	40.0 1016.0	48 _ 1238.2		4 _ 114.3	7 5/8 193.6		41 _ 1047.7	42 _ 1085.8	32	1 _ 44.4	45 _ 1155.7	
42“	42.0 1066.8	50 _ 1289.0		4 11/16 119.1	7 7/8 200.1		43 _ 1098.5	44 _ 1136.6	32	1 _ 44.4	47 _ 1206.5	
44“	44.0 1117.6	53 _ 1352.5		4 7/8 123.9	8 1/8 206.3		45 _ 1149.3	47 1193.8	32	1 7/8 47.6	49 _ 1263.6	
46“	46.0 1168.4	55 _ 1416.0		5 1/16 128.5	8 _ 215.9		47 3/8 1203.4	49 1244.6	28	2 50.8	52 1320.8	
48“	48.0 1219.2	57 _ 1466.8		5 _ 133.4	8 13/16 223.8		49 3/8 1254.1	51 _ 1301.7	32	2 50.8	54 1371.6	
50“	50.0 1270.0	60 _ 1530.3		5 _ 139.7	9 1/8 231.7		51 3/8 1304.9	53 _ 1358.9	32	2 1/8 53.9	56 _ 1428.7	
52“	52.0 1320.8	62 _ 1581.1		5 11/16 144.5	9 3/8 238.1		53 3/8 1355.7	55 _ 1409.7	32	2 1/8 53.9	58 _ 1479.5	
54“	54.0 1371.6	65 _ 1657.3		6 152.4	9 15/16 252.4		55 _ 1409.7	57 _ 1466.8	28	2 3/8 60.3	61 1549.4	
56“	56.0 1422.4	67 _ 1708.1		6 1/16 153.9	10 _ 260.3		57 5/8 1463.6	59 _ 1517.6	28	2 3/8 60.3	63 1600.2	
58“	58.0 1473.2	69 _ 1758.9		6 _ 158.7	10 _ 266.7		59 5/8 1514.4	62 1574.8	32	2 3/8 60.3	65 1651.0	
60“	60.0 1524.0	71 _ 1809.7		6 7/16 163.5	10 _ 273.0		61 5/8 1565.2	64 1625.6	32	2 3/8 60.3	67 1701.8	

400lb/sq.in. Welding Neck Flanges
MSS SP-44



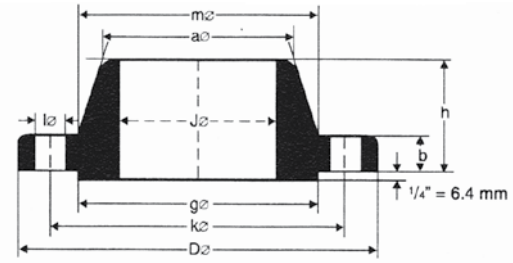
Pipe		Flange				Hub		Raised Face	Drilling Template			Appr. Weight
Nom. Size	OD in. mm	D in. mm	J in. mm	b in. mm	h in. mm	a in. mm	m in. mm	g in mm	Number	l in. mm	k in mm	Pounds Kilo
26“	26.0 660.4	38 _ 971.5	To be specified by purchaser	3 _ 88.9	7 5/8 193.7	To be specified by purchaser	28 5/8 727.1	29 _ 749.3	28	1 7/8 47.6	34 _ 846.3	To be specified by purchaser
28“	28.0 711.2	40 _ 1035.0		3 _ 95.2	8 1/8 206.4		30 13/16 782.6	31 _ 800.1	28	2 50.8	37 939.8	
30“	30.0 762	43 1092.2		4 101.6	8 5/8 219.1		32 15/16 836.6	33 _ 857.2	28	2 1/8 54.0	39 _ 996.9	
32“	32.0 812.8	45 _ 1149.3		4 _“ 107.9	9 1/8 231.8		35 889.0	36 914.4	28	2 1/8 54.0	41 _ 1054.1	
34“	34.0 863.6	47 _ 1206.5		4 3/8 111.1	9 _ 241.3		37 3/16 944.6	38 965.2	28	2 1/8 54.0	43 _ 1104.9	
36“	36.0 914.4	50 1270.0		4 _ 114.3	9 7/8 250.8		39 1/8 1000.1	40 _ 1022.3	32	2 1/8 54.0	46 1168.4	
38“	38.0 965.2	47 _ 1206.5		4 7/8 123.8	8 1/8 206.3		39 _ 1003.3	40 _ 1035.0	32	1 7/8 47.6	44 1117.6	
40“	40.0 1016.0	50 1270.0		5 1/8 130.1	8 _ 215.9		41 _ 1054.1	43 1092.2	32	2 50.8	46 _ 1174.7	
42“	42.0 1066.8	52 1320.8		5 _ 133.3	8 13/16 223.8		43 5/8 1108.0	45 1143.0	32	2 50.8	48 _ 1225.5	
44“	44.0 1117.6	54 _ 1384.3		5 _ 139.7	9 3/16 233.3		45 5/8 1158.8	47 _ 1200.1	32	2 1/8 53.9	50 _ 1282.7	
46“	46.0 1168.4	56 _ 1441.4		5 _ 146.0	9 5/8 244.0		47 _ 1212.8	49 _ 1257.3	36	2 1/8 53.9	52 _ 1339,8	
48“	48.0 1219.2	59 _ 1511.3		6 152.4	10 1/8 257.1		49 7/8 1266.8	51 _ 1308.1	28	2 3/8 60.3	55 _ 1403.3	
50“	50.0 1270.0	61 _ 1568.4		6 3/16 157.2	10 9/16 268.2		52 1320.8	53 5/8 1362.0	32	2 3/8 60.3	57 _ 1460.5	
52“	52.0 1320.8	63 _ 1619.2		6 3/8 161.9	10 7/8 276.2		54 1371.6	55 5/8 1412.8	32	2 3/8 60.3	59 _ 1511.3	
54“	54.0 1371.6	67 1701.8		6 11/16 169.9	11 3/8 288.9		56 1/8 1425.5	57 7/8 1470.0	28	2 5/8 66.6	62 _ 1581.1	
56“	56.0 1422.4	69 1752.6		6 7/8 174.6	11 _ 298.4		58 _ 1479.5	60 1/8 1527.1	32	2 5/8 66.6	64 _ 1631.9	
58“	58.0 1473.2	71 1803.4		7 177.8	12 1/16 306.3		60 _ 1530.3	62 1/8 1577.9	32	2 5/8 66.6	66 _ 1682.7	
60“	60.0 1524.0	74 _ 1885.9		7 5/16 185.7	12 9/16 319.0		62 3/8 1584.3	64 3/8 1635.1	32	2 7/8 73.0	69 1752.6	

600lb/sq.in. Welding Neck Flanges
MSS SP-44

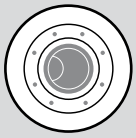


Pipe		Flange				Hub		Raised Face	Drilling Template			Appr. Weight
Nom. Size	OD in. mm	D in. mm	J in. mm	b in. mm	h in. mm	a in. mm	m in. mm	g in mm	Number	l in. mm	k in mm	Pounds Kilo
26“	26.0 660.4	40 1016.0	To be specified by purchaser	4 _ 107.9	8 _ 222.2	To be specified by purchaser	7/16 747.7	29 _ 749.3	28	2 50.8	36 914.4	To be specified by purchaser
28“	28.0 711.2	42 _ 1073.1		4 3/8 111.1	9 _ 234.9		5/8 803.3	31 _ 800.1	28	2 1/8 54.0	38 965.2	
30“	30.0 762	44 _ 1130.3		4 _ 114.3	9 _ 247.6		16/16 862.0	33 _ 857.2	28	2 1/8 54.0	40 _ 1022.3	
32“	32.0 812.8	47 1193.8		4 5/8 117.5	10 _ 260.3		36 1/8 917.6	36 914.4	28	2 3/8 60.3	42 _ 1079.5	
34“	34.0 863.6	49 1244.6		4 _ 120.6	10 5/8 269.9		38 5/16 973.1	38 965.2	28	2 3/8 60.3	44 _ 1130.3	
36“	36.0 914.4	51 _ 1314.4		4 7/8 123.8	11 1/8 282.6		40 5/8 1031.9	40 _ 1022.3	28	2 5/8 66.7	47 1193.8	
38“	38.0 965.2	50 1270.0		6 152.4	10 254.0		40 _ 1022.3	41 _ 1054.1	28	2 3/8 60.3	45 _ 1162.0	
40“	40.0 1016.0	52 1320.8		6 _ 158.7	10 3/8 263.5		42 _ 1073.1	43 _ 1111.2	32	2 3/8 60.3	47 _ 1212.8	
42“	42.0 1066.8	55 _ 1403.3		6 5/8 168.2	11 279.4		44 3/8 1127.1	46 1168.4	28	2 5/8 66.7	50 _ 1282.7	
44“	44.0 1117.6	57 _ 1554.1		6 13/16 173.0	11 3/8 288.9		46 _ 1181.1	48 _ 1225.5	32	2 5/8 66.7	52 _ 1333.5	
46“	46.0 1168.4	59 _ 1511.3		7 1/16 179.3	11 13/15 300.0		8 5/8 1235.1	50 _ 1276.3	32	2 5/8 66.7	54 _ 1390.6	
48“	48.0 1219.2	62 _ 1593.8		7 7/16 188.9	12 7/16 315.9		50 _ 1289.0	52 _ 1333.5	32	2 7/8 73.0	57 _ 1460.5	
50“	50.0 1270.0	65 _ 1670.0		7 _ 196.8	12 15/16 328.6		50 7/8 1292.2	54 _ 1384.3	28	3 1/8 79.3	60 1524.0	
52“	52.0 1320.8	67 _ 1720.8		8 203.2	13 _ 336.5		54 7/8 1393.8	56 _ 1435.1	32	3 1/8 79.3	62 1574.8	
54“	54.0 1371.6	70 1778.0		8 _ 209.5	13 _ 349.2		57 1447.8	58 _ 1492.21	32	3 1/8 79.3	64 _ 1631.9	
56“	56.0 1422.4	73 1854.2		8 9/16 217.4	14 _ 361.9		59 1/8 1501.7	60 _ 1543.0	32	3 3/8 85.7	66 _ 1695.4	
58“	58.0 1473.2	75 1905.0		8 _ 222.2	14 9/16 369.8		61 1/8 1552.5	63 1600.2	32	3 3/8 85.7	68 _ 1746.2	
60“	60.0 1524.0	78 _ 1993.9		9 3/16 233.4	15 5/16 388.9		63 3/8 1609.7	65 _ 1657.3	28	3 5/8 92.0	71 _ 1822.4	

900lb/sq.in. Welding Neck Flanges
MSS SP-44

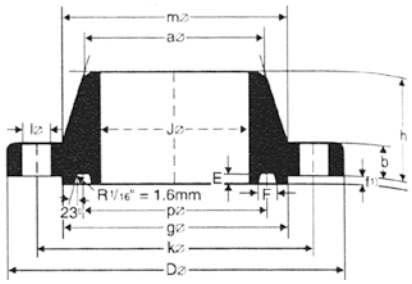


Pipe		Flange				Hub		Raised Face	Drilling Template			Appr. Weight
Nom. Size	OD in. mm	D in. mm	J in. mm	b in. mm	h in. mm	a in. mm	m in. mm	g in mm	Number	l in. mm	k in mm	Pounds Kilo
26“	26.0 660.4	42 _ 1085.8	To be specified by purchaser	5 _ 139.7	11 _ 285.7	To be specified by purchaser	30 _ 774.4	29 _ 749.3	20	2 7/8 73.0	37 _ 952.5	To be specified by purchaser
28“	28.0 711.2	46 1168.4		5 5/8 142.9	11 _ 298.4		32 _ 831.8	31 _ 800.1	20	3 1/8 79.4	40 _ 1022.3	
30“	30.0 762	48 _ 1231.9		5 7/8 149.2	12 _ 311.1		35 889.0	33 _ 857.2	20	3 1/8 79.4	42 _ 1085.8	
32“	32.0 812.8	51 _ 1314.4		6 _ 158.7	13 330.2		37 _ 946.1	36 914.4	20	3 3/8 85.7	45 _ 1155.7	
34“	34.0 863.6	55 1397.0		6 _ 165.1	13 _ 349.2		39 5/8 1006.5	38 965.2	20	3 5/8 92.1	48 _ 1225.5	
36“	36.0 914.4	57 _ 1460.5		6 _ 171.4	14 _ 361.9		41 7/8 1063.6	40 _ 1022.3	20	3 5/8 92.1	50 _ 1289.0	
38“	38.0 965.2	57 _ 1460.5		7 _ 190.5	13 7/8 352.4		42 _ 1073.1	43 _ 1098.5	20	3 5/8 92.1	50 _ 1289.0	
40“	40.0 1016.0	59 _ 1511.3		7 _ 196.8	14 5/16 363.5		44 3/8 1127.1	45 _ 1162.0	24	3 5/8 92.1	52 _ 1339.8	
42“	42.0 1066.8	61 _ 1562.1		8 1/8 206.3	14 5/8 371.4		46 5/16 1176.3	47 _ 1212.8	24	3 5/8 92.1	54 _ 1390.6	
44“	44.0 1117.6	64 7/8 1647.8		8 7/16 214.3	15 3/8 390.5		48 5/8 1235.0	50 1270.0	24	3 7/8 98.4	57 5/8 1463.6	
46“	46.0 1168.4	68 _ 1733.5		8 7/8 225.4	16 3/16 411.1		50 7/8 1292.2	52 _ 1333.5	24	4 1/8 104.7	60 _ 1536.7	
48“	48.0 1219.2	70 _ 1784.3		9 3/16 233.4	16 _ 419.1		52 7/8 1343.0	54 _ 1384.3	24	4 1/8 104.7	62 _ 1587.5	



300 lb/sq.in.

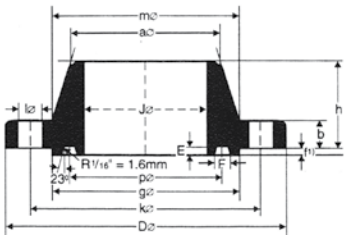
1) f=Height of raised portion and depth of groove dimensions >>E<< but not covered by tolerances for >>E<<.



Pipe		Flange				Hub		Raised Face	Drilling Template			Ring Joint			Approx.
Nom. Size	OD in. mm	D in. mm	J in. mm	b in. mm	h in. mm	a in. mm	m in. mm	g in. mm	Num-ber	l in. mm	k in. mm	p in. mm	E in. mm	F in. kilo	Pounds
26“	26.0	38 _	To be specified by purchaser	3 1/8	7 1/4	To be specified by purchaser	28 3/8	31 7/8	28	1 3/4	34 1/2	29 1/2	1/2	25/32	To be specified by purchaser
	660.4	971.5		79.4	184.1		720.7	809.6		44.4	876.3	749.3	12.7	19.8	
28“	28.0	40 3/4		3 3/8	7 3/4		30 1/2	33 7/8	28	1 3/4	37	31 1/2	1/2	25/32	
	711.2	1035.0		85.7	196.8		774.7	860.4		44.4	939.8	800.1	12.7	19.8	
30“	30.0	43		3 5/8	8 1/4		32 9/16	36 1/8	28	1 7/8	39 1/4	33 3/4	1/2	25/32	
	762	1092.2		92.1	209.5		827.1	917.6		47.6	996.9	857.2	12.7	19.8	
32“	32.0	45 1/4		3 7/8	8 3/4		34 11/16	38 3/4	28	2	41 1/2	36	9/16	29/32	
	812.8	1149.3		98.4	222.2		881.1	984.2		50.8	1054.1	914.4	14.3	23.0	
34“	34.0	47 1/2		4	9 1/8		36 7/8	40 3/4	28	2	43 1/2	38	9/16	29/32	
	863.6	1206.5		101.6	231.8		936.6	1035.0		50.8	1104.9	965.2	14.3	23.0	
36“	36.0	50		4 1/8	9 1/2		39	43	32	2 1/8	46	40 1/4	9/16	29/32	
	914.4	1270.0		104.8	241.3		990.6	1092.2		54.0	1168.4	1022.3	14.3	23.0	

400 lb/sq.in.

Pipe		Flange				Hub		Raised Face	Drilling Template			Ring Joint			Approx.
Nom. Size	OD in. mm	D in. mm	J in. mm	b in. mm	h in. mm	a in. mm	m in. mm	g in. mm	Num-ber	l in. mm	k in. mm	p in. mm	E in. mm	F in. kilo	Pounds
26“	26.0	38 _	To be specified by purchaser	3 1/2	7 5/8	To be specified by purchaser	28 5/8	31 7/8	28	1 7/8	34 1/2	29 1/2	1/2	25/32	To be specified by purchaser
	660.4	971.5		88.9	193.7		727.1	809.6		47.6	876.3	749.3	12.7	19.8	
28“	28.0	40 3/4		3 3/4	8 1/8		30 13/16	33 7/8	28	2	37	31 1/2	1/2	25/32	
	711.2	1035.0		95.2	206.4		782.6	860.4		50.8	939.8	800.1	12.7	19.8	
30“	30.0	43		4	8 5/8		32 15/16	36 1/8	28	2 1/8	39 1/4	33 3/4	1/2	25/32	
	762	1092.2		101.6	219.1		836.6	917.6		54.0	996.9	857.2	12.7	19.8	
32“	32.0	45 1/4		4 1/4	9 1/8		35	38 3/4	28	2 1/8	41 1/2	36	9/16	29/32	
	812.8	1149.3		107.9	231.8		889.0	984.2		54.0	1054.1	914.4	14.3	23.0	
34“	34.0	47 1/2		4 3/8	9 1/2		37 3/16	40 3/4	28	2 1/8	43 1/2	38	9/16	29/32	
	863.6	1206.5		111.1	241.3		944.6	1035.0		54.0	1104.9	965.2	14.3	23.0	
36“	36.0	50		4 1/2	9 7/8		39 3/8	43	32	2 1/8	46	40 1/4	9/16	29/32	
	914.4	1270.0		114.3	250.8		1000.1	1092.2		54.0	1168.4	1022.3	14.3	23.0	



600 lb/sq.in.

1) f=Height of raised portion and depth of groove dimensions >>E<< but not covered by tolerances for >>E<<.

Pipe		Flange				Hub		Raised Face	Drilling Template			Ring Joint			Approx.
Nom. Size	OD in. mm	D in. mm	J in. mm	b in. mm	h in. mm	a in. mm	m in. mm	g in. mm	Number	l in. mm	k in. mm	p in. mm	E in. mm	F in. kilo	Pounds
26“	26.0	40	To be specified by purchaser	4 1/4	8 3/4	To be specified by purchaser	29 7/16	31 7/8	28	2	36	29 1/2	1/2	25/32	To be specified by purchaser
	660.4	1016.0		107.9	222.2		747.7	809.6		50.8	914.4	749.3	12.7	19.8	
28“	28.0	42 1/4		4 3/8	9 1/4		31 5/8	33 7/8	28	2 1/8	38	31 1/2	1/2	25/32	
	711.2	1073.1		111.1	234.9		803.3	860.4		54.0	965.2	800.1	12.7	19.8	
30“	30.0	44 1/2		4 1/2	9 3/4		33 15/16	36 1/8	28	2 1/8	40 1/4	33 3/4	1/2	25/32	
	762	1130.3		114.3	247.6		862.0	917.6		54.0	1022.3	857.2	12.7	19.8	
32“	32.0	47		4 5/8	10 1/4		36 1/8	38 3/4	28	2 3/8	42 1/2	36	9/16	29/32	
	812.8	1193.8		117.5	260.3		917.6	984.2		60.3	1079.5	914.4	14.3	23.0	
34“	34.0	49		4 3/4	10 5/8		38 5/16	40 3/4	28	2 3/8	44 1/2	38	9/16	29/32	
	863.6	1244.6		120.6	269.9		973.1	1035.0		60.3	1130.3	965.2	14.3	23.0	
36“	36.0	51 3/4		4 7/8	11 1/8		40 5/8	43	28	2 5/8	47	40 1/4	9/16	29/32	
	914.4	1314.4		123.8	282.6		1031.9	1092.2		66.7	1193.8	1022.3	14.3	23.0	

900 lb/sq.in.

Pipe		Flange				Hub		Raised Face	Drilling Template			Ring Joint			Approx.
Nom. Size	OD in. mm	D in. mm	J in. mm	b in. mm	h in. mm	a in. mm	m in. mm	g in. mm	Number	l in. mm	k in. mm	p in. mm	E in. mm	F in. kilo	Pounds
26“	26.0	42 3/4	To be specified by purchaser	5 1/2	11 1/4	To be specified by purchaser	31 1/2	32 3/4	20	2 7/8	37 1/2	29 1/2	11/16	1 3/16	To be specified by purchaser
	660.4	1085.8		139.7	285.7		774.4	831.8		73.0	952.5	749.3	17.5	30.2	
28“	28.0	46		5 5/8	11 3/4		32 3/4	35	20	3 1/8	40 1/4	31 1/2	11/16	1 5/16	
	711.2	1168.4		142.9	298.4		831.8	889.0		79.4	1022.3	800.1	17.5	33.3	
30“	30.0	48 1/2		5 7/8	12 1/4		35	37 1/4	20	3 1/8	42 3/4	33 3/4	11/16	1 5/16	
	762	1231.9		149.2	311.1		889.0	946.1		79.4	1085.8	857.2	17.5	33.3	
32“	32.0	51 3/4		6 1/4	13		37 1/4	39 1/2	20	3 3/8	45 1/2	36	11/16	1 5/16	
	812.8	1314.4		158.7	330.2		946.1	1003.3		85.7	1155.7	914.4	17.5	33.3	
34“	34.0	55		6 1/2	13 3/4		39 5/8	42	20	3 5/8	48 1/4	38	13/16	1 7/16	
	863.6	1397.0		165.1	349.2		1006.5	1066.8		92.1	1225.5	965.2	20.6	36.5	
36“	36.0	57 1/2		6 3/4	14 1/4		41 7/8	44 1/4	20	3 5/8	50 3/4	40 1/4	13/16	1 7/16	
	914.4	1460.5		171.4	361.9		1063.6	1123.9		92.1	1289.0	1022.3	20.6	36.5	

Nominal Sizes from 26“ to 60“
Standard for large diameter carbon steel flanges
for nominal pressure ratings of 150 and 300 lb/sq.in.

General Survey

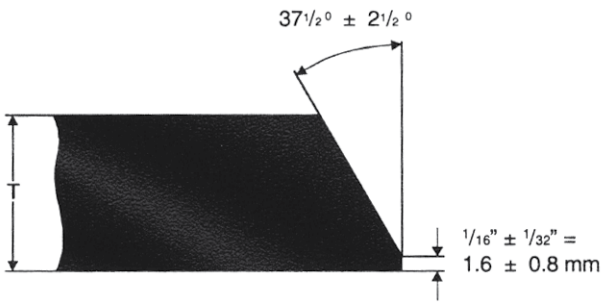
Nominal Pressure lb/sq.in.	150	300	Attention!
kp/cm2	10.6	21.1	Flanges to API Standard 605 are not
N/cm2	104	207	identical with MSS SP 44 and BS 3293
Type of Flange	max. Nominal Sizes		
Welding Neck Flanges	60“	60“	

Facings and Dimensional Tolerances acc. to ANSI B 16.5

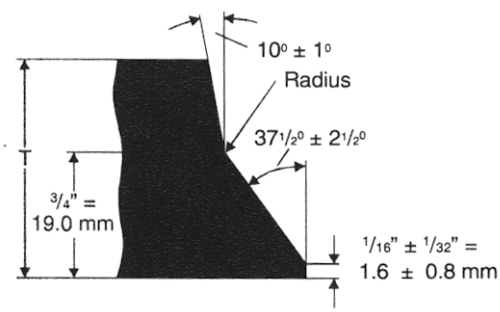
Example of Marking
The Flanges are marked with the following information:

Manufacturer/s name or trade mark
Nominal size
Primary service pressure
Material designation
Heat code
Schedule No.
recognition letter x before
Primary service pressure

Welding Ends:

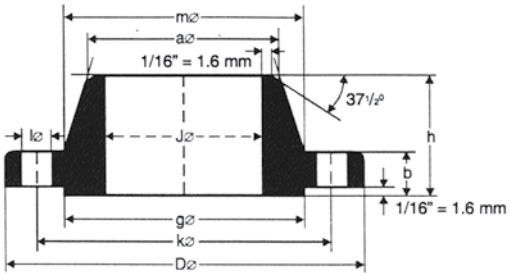


Bevel for Wall Thickness (T) 3/16“ to 7/8“ inclusive



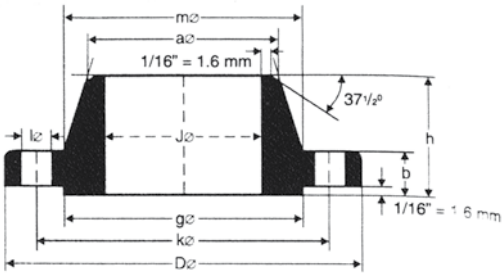
Bevel for Wall Thickness (T) greater than 7/8“

150lb/sq.in. Welding Neck Flanges
API Standard 605

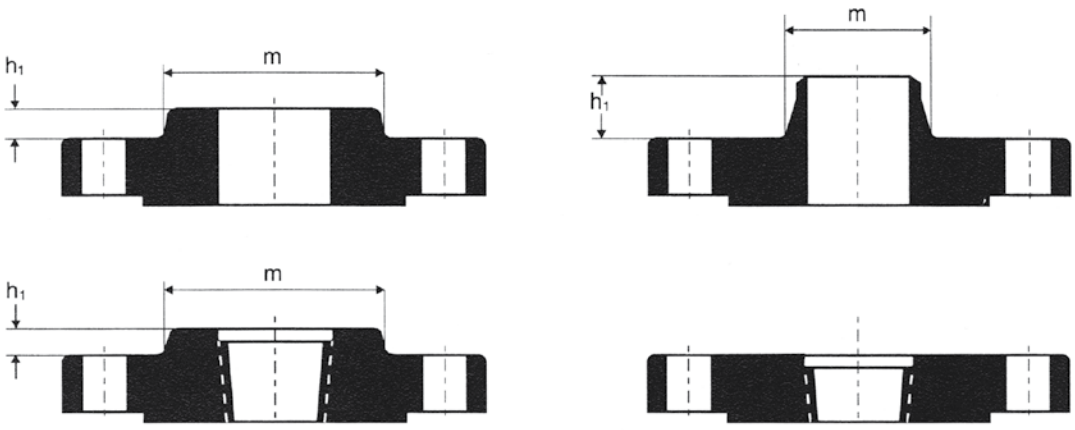


Pipe		Flange				Hub		Raised Face	Drilling Template			Appr. Weight
Nom. Size	OD in. mm	D in. mm	J in. mm	b in. mm	h in. mm	a in. mm	m in. mm	g in mm	Number	l in. mm	k in mm	Pounds Kilo
26“	26.0	34 15/16	To be specified by purchaser	1 5/8	3 1/2	26 1/16	26 15/16	28	36	7/8	29 5/16	139
	660.4	785.8		41.3	88.9	662.0	684.2	711.2		22.2	744.5	63
28“	28.0	32 15/16		1 3/4	3 3/4	28 1/16	28 15/16	30	40	7/8	31 5/16	163
	711.2	836.6		44.4	95.2	712.8	735.0	762.0		22.2	795.3	74
30“	30.0	34 15/16		1 3/4	3 15/16	30 1/16	31	32	44	7/8	33 5/16	176
	762	887.4		44.4	100.0	763.6	787.4	812.8		22.2	846.1	80
32“	32.0	37 1/16		1 13/16	4 1/4	32 1/16	33 1/16	34	48	7/8	35 7/16	203
	812.8	941.4		46	107.9	814.4	839.8	863.6		22.2	900.1	92
34“	34.0	39 9/16		1 15/16	4 11/32	34 1/16	35 1/8	36 1/4	40	1	37 11/16	249
	863.6	1004.9		49.2	110.3	865.2	892.2	920.7		25.4	957.3	113
36“	36.0	41 5/8		2 1/16	4 5/8	36 1/16	37 3/16	38 1/4	44	1	39 3/4	284
	914.4	1057.3		52.4	117.5	916.0	944.6	971.5		25.4	1009.6	129
42“	42.0	48 1/4		2 5/16	5 1/4	42 1/8	43 3/8	44 1/2	48	1 1/8	46 1/8	406
	1066.8	1225.5		58.7	133.3	1070.0	1101.7	1130.3		28.6	1171.6	184
48“	48.0	54 13/16		2 9/16	5 7/8	48 1/8	49 1/2	50 3/4	44	1 1/4	52 9/16	509
	1219.2	1392.2		65.1	149.2	1222.4	1257.3	1289.0		31.7	1335.1	231
54“	54.0	61		2 13/16	6 3/8	54 1/8	55 5/8	56 3/4	56	1 1/4	58 3/4	632
	1371.6	1549.4		71.4	161.9	1374.8	1412.9	1441.9		31.7	1492.2	287
60“	60.0	67 15/16		3	7 1/16	60 1/8	61 13/16	63	52	1 3/8	66 7/16	855
	1524	1725.6		76.2	179.4	1527.2	1570.0	1600.2		34.9	1662.1	388

300lb/sq.in. Welding Neck Flanges
API Standard 605



Pipe		Flange				Hub		Raised Face	Drilling Template			Appr. Weight
Nom. Size	OD in. mm	D in. mm	J in. mm	b in. mm	h in. mm	a in. mm	m in. mm	g in mm	Number	l in. mm	k in mm	Pounds Kilo
26“	26.0	34 1/8	To be specified by purchaser	3 1/2	5 11/16	26 3/16	27 5/8	29	32	1 3/8	31 5/8	399
	660.4	866.8		88.9	144.5	665.2	701.7	736.6		34.9	803.3	181
28“	28.0	36 1/4		3 1/2	5 7/8	28 3/16	29 3/4	31	36	1 3/8	33 3/4	447
	711.2	920.7		88.9	149.2	716.0	755.6	787.4		34.9	857.2	203
30“	30.0	39		3 11/16	3 7/32	30 1/4	32	33 1/4	36	1 1/2	36 1/4	590
	762	990.6		93.7	158.0	768.4	812.8	844.5		38.1	920.7	268
32“	32.0	41 1/2		4 1/16	6 5/8	32 1/4	34	35 1/2	32	1 5/8	38 1/2	727
	812.8	1054.1		103.2	168.3	819.2	863.6	901.7		41.3	977.9	330
34“	34.0	43 5/8		4 1/16	6 13/16	34 1/4	36 1/8	37 1/2	36	1 5/8	40 5/8	787
	863.6	1108.1		103.2	173.0	869.9	917.6	952.5		41.3	1031.9	357
36“	36.0	46 1/8		4 1/16	7 1/8	36 1/4	38	39 3/4	32	1 3/4	42 7/8	893
	914.4	1171.6		103.2	181.0	920.7	965.2	109.6		44.4	1089.0	405
42“	42.0	52 1/2		4 11/16	8 1/16	42 5/16	44	46	36	1 7/8	49	1252
	1066.8	1333.5		119.1	204.8	1074.7	1117.6	1168.4		47.6	1244.6	568
48“	48.0	59 1/2		5 1/16	8 13/16	48 5/16	50 5/16	52 1/4	40	2	55 3/4	1611
	1219.2	1511.3		128.6	223.8	1227.1	1277.9	1327.1		50.8	1416.0	731
54“	54.0	55 7/8		5 3/8	9 7/16	54 5/16	56 1/2	58 1/4	48	2	62 1/8	1979
	1371.6	1673.2		136.5	239.7	1379.5	1435.1	1479.5		50.8	1578.0	898
60“	60.0	73 15/16		5 15/16	10 11/16	60 5/16	62 15/16	65	40	2 3/8	69 7/16	2890
	1524	1878.0		150.8	271.5	1531.9	1598.6	1651.0		60.3	1763.7	1311

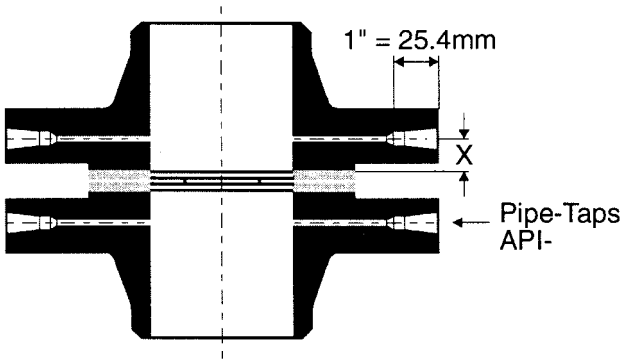


Nominal Pipe Size	Minimum Bore or tapping of Hub Flange	Nominal Pipe Size	Minimum Bore or tapping of Hub Flange	Nominal Pipe Size	Minimum Bore or tapping of Hub Flange
	3 1/2“	1 1/2“	3 1/2“	3 1/2“	
1“	1/2“	4“	1 1/2“	14“	4“
1 1/4“	1/2“	5“	1 1/2“	16“	4“
1 1/2“	1/2“	6“	2 1/2“	18“	4“
2“	1“	8“	3“	20“	4“
2 1/2“	1 1/4“	10“	3 1/2“		
3“	1 1/4“	12“		24“	4“

Reducing Flanges
Drilling, OD, Thickness and Facing Dimensions
Flange drilling, OD, thickness and facing are the same as those of the standard flange of the size from which the reduction is being made.

Hub Dimensions
Threaded and Slip-on Flanges
The hub dimensions shall be at least as large as those of the standard flange of the size to which the reduction is being made. The hub may be larger or omitted.

Welding Neck Flanges
The hub dimensions shall be the same as those of the standard flange of the size to which the reduction is being made.



Orifice flanges are manufactured in sizes from 1“ to 24“ as welding neck, slip-on or threaded flanges.
The two tap holes of each orifice flanges are provided with plugs.
All orifice flanges are drilled and machined for the installation of a jack screw.

Dimensions:
The dimensions are in accordance with those of the flanges standardized to ANSI B 16.5.

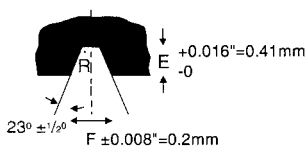
Tap Holes:
1/2“ API-thread for flanges class 300, 400 and 600.
3/4“ API-thread for flanges class 900 and 1500.

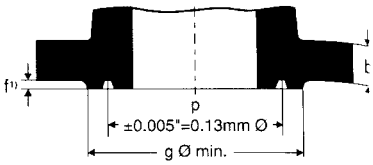
Tap hole diameters:
0.250“ for DN 2 1/2“ and smaller
0.375“ for DN 3“
0.500“ for DN 4“ and larger

Distance of holes „x“
0.938“ for all flanges with raised faces.

The distance from the centerline of the tap hole to the face of the flange is 0.750“ for flanges ring type joint with a groove depth of 0.375“ and smaller. In case of a groove depth of 0.438“ and larger an alteration of the diameter or type of the tap hole is necessary.

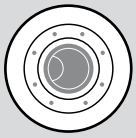
Minimum flange thickness:
In order to obtain space for the tap holes the thickness of the flanges in the range of the small sizes is as follows:
1.500“ for raised face flanges class 300-600
1.375“ for raised face flanges class 900-1500
1.250“ for ring type joint flanges class 300-1500.

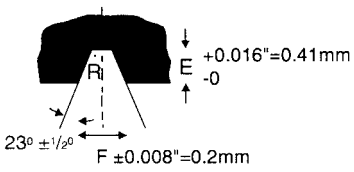


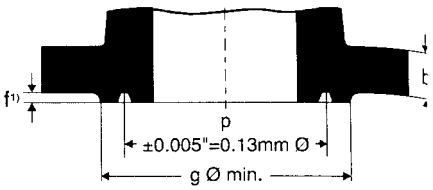


Nominal Size							Ring No.	Groove Dimensions				Diameter of Raised Face g				
150 lb/sq in	300 lb/sq in	400 lb/sq in	600 lb/sg in	900 lb/sq in	1500 lb/sq in	2500 lb/sq		Pitch Dia meter P	Depth E	Width F	Radius at Bottom max R	150 lb/sq in	300 400 600 lb/sq in	900 b/sq in	1500 b/sq in	2500 b/sq in
	1/2“	For sizes 1/2“ to 3.1/2“ data for 600 lb to be used.	1/2“	For sizes 1/2“ to 2.1/2“ data for 1500 lb to be used.			R11	1.344 34.1	0.219 5.6	0.281 7.1	0.03 0.8		2.00 50.8			
					1/2“		R12	1.562 39.7	0.250 6.4	0.344 8.7	0.03 0.8				2.38 60.5	
	3/4“		3/4“			1/2“	R13	1.688 42.9	0.250 6.4	0.344 8.7	0.03 0.8		2.50 63.5			2.56 65.0
					3/4“		R14	1.750 44.5	0.250 6.4	0.344 8.7	0.03 0.8				2.62 66.5	
1“							R15	1.875 47.6	0.250 6.4	0.344 8.7	0.03 0.08	2.50 63.5				
	1“		1“		1“	3/4“	R16	2.000 50.8	0.250 6.4	0.344 8.7	0.03 0.8		2.75 69.9		2.81 71.4	2.88 73.2
1 1/4“							R17	2.250 57.2	0.250 6.4	0.344 8.7	0.03 0.88	2.88 73.2				
	+1/4“		1 1/4“		1 1/4“	1“	R18	2.375 60.3	0.250 6.4	0.344 8.7	0.03 0.8		3.12 79.2		3.19 81.0	3.25 82.6
1 1/2“							R19	2.562 65.1	0.250 6.4	0.344 8.7	0.03 0.8	3.25 82.5				
	1 1/2“		1 1/2“		1 1/2“		R20	2.688 68.3	0.250 6.4	0.344 8.7	0.03 0.8		3.55 90.4		3.62 91.9	
						1 1/4“	R21	2.844 72.2	0.312 7.9	0.469 11.9	0.03 0.8					4.00 101.6
2“							R22	3.250 82.6	0.250 6.4	0.344 8.7	0.03 0.8	4.00 101.6				
	2“		2“			1 1/2“	R23	3.250 82.6	0.312 7.9	0.469 11.9	0.03 0.8		4.25 108.0			4.50 114.3
					2“		R24	3.750 95.3	0.312 7.9	0.469 11.9	0.03 0.8				4.88 124.0	
2 1/2“							R25	4.000 101.6	0.250 6.4	0.344 8.7	0.03 0.08	4.75 120.7				
2 1/2“			2 1/2“			2“	R26	4.000 101.6	0.312 7.9	0.460 11.9	0.03 0.8		5.00 127.0			5.25 133.4
					2 1/2“		R27	4.250 108.0	0.312 7.9	0.469 11.9	0.03 0.8				5.38 136.7	
						2 1/2“	R28	4.375 111.1	0.375 9.5	0.531 13.5	0.06 1.5					5.88 149.4

Flanges: Ring Joint Faces
ANSI B16.5





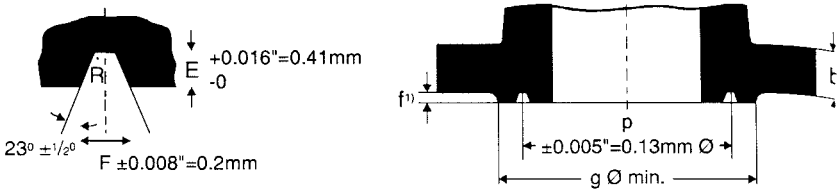


Nominal Size							Ring No.	Groove Dimensions				Diameter of Raised Face g				
150 lb/sq in	300 lb/sq in	400 lb/sq in	600 lb/sg in	900 lb/sq in	1500 lb/sq in	2500 lb/sq		Pitch Diameter P	Depth E	Width F	Radius at Bottom max R	150 lb/sq in	300 400 600 lb/sq in	900 b/sq in	1500 b/sq in	2500 b/sq in
3“		For sizes 1/2“ to 3.1/2“ data for 600 lb to be used.					R29	4.500 114.3	0.250 6.4	0.344 8.7	0.03 0.8	5.25 133.4				
	*)		*)				R30	4.625 117.5	0.312 7.9	0.469 11.9	0.03 0.8					
	*)3“		*)3“	3“			R31	4.875 123.8	0.312 7.9	0.469 11.9	0.03 0.8		5.75 146.1	6.12 155		
						3“	R32	5.000 127.0	0.375 9.5	0.531 13.5	0.06 0. 8					6.62 168.1
3 1/2“							R33	5.188 131.8	0.250 6.4	0.344 8.7	0.06 0.8	6.06 153.9				
	3 1/2“		3 1/2“				R34	5.188 131.8	0.312 7.9	0.469 11.9	0.03 0.8	6.25 158.8				
					3“		R35	5.375 136.5	0.312 7.9	0.469 11.9	0.03 0.8				6.62 168.1	
4“							R36	5.875 149.2	0.250 6.4	0.344 8.7	0.03 0.8	6.75 171.5				
	4“	4“	4“	4“			R37	5.875 149.2	0.312 7.9	0.469 11.9	0.03 0.8		6.88 174.8	7.12 180.8		
						4“	R38	6.188 157.2	0.438 11.1	0.656 16.7	0.06 1.5					8.00 203.2
					4“		R39	6.375 161.9	0.312 7.9	0.469 11.9	0.03 0.8			7.62 193.5		
5“							R40	6.750 149.2	0.250 6.4	0.344 8.7	0.03 0.8	7.75 171.5				
	5“	5“	5“	5“			R41	7.125 149.2	0.312 7.9	0.469 11.9	0.03 0.8		8.25 209.5	8.50 215.9		
						5“	R42	7.500 190.5	0.500 12.7	0.781 19.8	0.06 1.5					9.50 241.3
6“							R43	7.625 193.7	0250 6.4	0.344 8.7	0.03 0.8	8.62 218.9				
					5“		R44	7.625 193.7	0.312 7.9	0.4690 11.9	0.03 0.8				9.00 228.6	
	6“	6“	6“	6“			R45	8.312 211.1	0.312 7.9	0.469 11.9	0.03 0.8		9.50 241.3	9.50 241.3		

1) f= Height of raised portion and depth of grooved dimensions >>E<< but not covered by tolerances for >>E<<

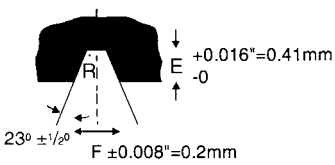
*) For ring joint with lapped flanges in the 300 and 600 lb standards, nng and groove number R 30 are used instead of R 31.

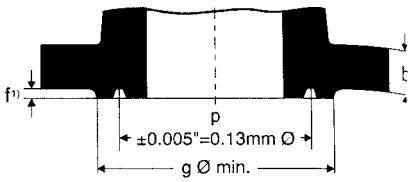
Flanges: Ring Joint Facings
Ansl B16.5



Nominal Size							Ring No.	Groove Dimensions				Diameter of Raised Face g				
150 lb/sq in	300 lb/sq in	400 lb/sq in	600 lb/sg in	900 lb/sq in	1500 lb/sq in	2500 lb/sq		Pitch Diameter P	Depth E	Width F	Radius at Bottom max R	150 lb/sq in	300 400 600 lb/sq in	900 b/sq in	1500 b/sq in	2500 b/sq in
					6“		R46	8.312 211.1	0.375 9.5	0.531 13.5	0.06 1.5				9.75 247.7	
						6“	R47	9.000 228.6	0.500 12.7	0.781 19.8	0.06 1.5					11.0 279.4
8“							R48	9.750 247.7	0.450 6.4	0.344 8.7	0.03 0.8	10.75 273.1				
	8“	8“	8“	8“			R49	10.625 269.9	0.312 7.9	0.469 11.9	0.03 0.8		11.88 301.8	12.12 307.8		
					8“		R50	10.625 269.9	0.438 11.1	0.656 16.7	0.06 1.5				12.50 317.5	
						8“	R51	11.000 279.4	0.562 14.3	0.906 23.0	0.06 1.5					13.38 339.9
10“							R52	12.750 304.8	0.250 6.4	0.344 8.7	0.03 0.8	13.00 330.2				
	10“	10“	10“	10“			R53	12.750 323.9	0.312 7.9	0.469 11.9	0.03 0.8		14.00 355.6	14.25 362.0		
					10”		R54	12.750 323.9	0.438 11.1	0.656 16.7	0.06 1.5				14.62 371.5	
						10“	R55	13.500 342.90	0.688 17.5	1.188 30.2	0.09 2.30					16.75 425.5
12”							R56	15.000 381.0	0.250 6.4	0.344 8.7	0.03 0.8	16.00 406.4				
	12“	12“	12“	12“			R57	15.000 381.0	0.312 7.9	0.469 11.9	0.03 0.8		16.25 412.8	16.50 419.1		
					12”		R58	15.000 381.0	0.562 14.3	0.906 23.0	0.06 1.5				17.25 438.2	
14”							R59	15.625 396.9	0.250 6.4	0.344 8.7	0.03 0.8	16.75 425.5				
						12“	R60	16.000 406.4	0.688 17.5	1.312 33.30	0.09 2.3					19.50 495.3
	14“	14“	14“				R61	16.500 419.1	0.312 7.9	0.469 11.9	0.03 0.8		18.00 457.2			
				14”			R62	16.500 419.1	0.438 7.9	0.656 11.9	0.06 0.8			13.38 466.9		
					14“		R63	16.500 419.1	0.625 15.9	1.062 27.0	0.09 2.3				19.50 489.0	

1) f= Height of raised portion and depth of grooved dimensions >>E<< but not covered by tolerances for >>E<<

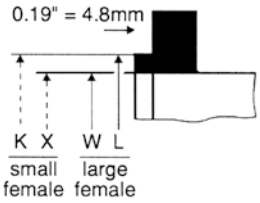


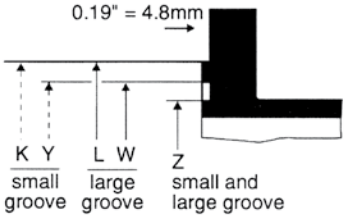


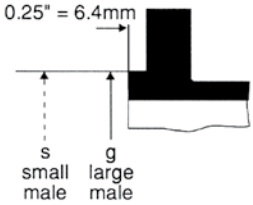
Nominal Size							Ring No.	Groove Dimensions				Diameter of Raised Face g				
150 lb/sq in	300 lb/sq in	400 lb/sq in	600 lb/sg in	900 lb/sq in	1500 lb/sq in	2500 lb/sq		Pitch Diameter P	Depth E	Width F	Radius at Bottom max R	150 lb/sq in	300 400 600 lb/sq in	900 b/sq in	1500 b/sq in	2500 b/sq in
16”							R64	17.875	0.250	0.344	0.03	19.00				
								454.0	6.4	8.7	0.8	482.6				
	16“	16“	16“				R65	18.500	0.312	0.469	0.03		20.00			
								469.9	7.9	11.9	0.8		508.0			
				16”			R66	18.500	0.438	0.656	0.06			20.62		
								469.9	11.1	16.7	1.5			523.7		
					16“		R67	18.500	0.688	1.188	0.09				21.50	
								469.9	11.1	16.7	1.5			523.7		
18”							R68	20.375	0.250	0.344	0.03	21.50				
								517.5	6.4	8.7	0.8	546.1				
	18“	18“	18“				R69	21.000	0.312	0.469	0.03		22.62			
								533.4	7.9	11.9	0.8		574.5			
				18”			R70	21.000	0.500	0.781	0.06			23.38		
								533.4	12.7	19.8	1.5			593.9		
					18“		R71	21.000	0.688	1.188	0.09				24.12	
								533.4	17.5	30.2	2.3				612.6	
20”							R72	22.000	0.250	0.344	0.03	23.50				
								558.86	6.4	8.7	0.8	596.9				
	20“	20“	20“				R73	23.000	0.375	0.531	0.06		25.00			
								584.2	9.5	13.5	1.5		635.0			
				20”			R74	23.000	0.500	0.781	0.06			25.50		
								584.2	12.7	19.8	1.5			647.7		
					20“		R75	23.000	0.688	1.312	0.09				26.50	
								584.2	17.5	33.3	2.3				673.1	
24”							R76	26.500	0.250	0.344	0.03	28.20				
								673.1	6.4	8.7	0.8	711.2				
	24“	24“	24“				R77	27.250	0.438	0.656	0.06		29.50			
								692.2	11.1	16.7	1.5		749.3			
				24”			R78	27.250	0.625	1.062	0.09			30.38		
								692.2	15.9	27.0	2.3			771.7		
					24“		R79	27.250	0.812	1.438	0.09				31.75	
								692.2	20.6	36.50	2.3				793.8	

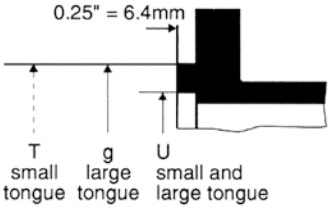
1) f= Height of raised portion and depth of grooved dimensions >>E<< but not covered by tolerances for >>E<<

150-2500lb/sq.in. ANSI B16-5





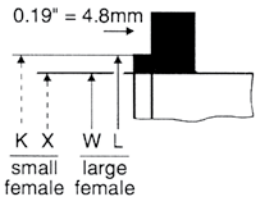


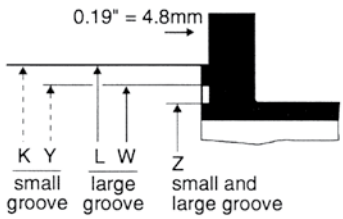


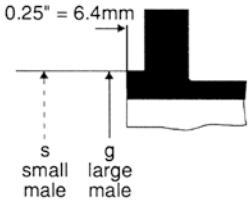
Nom. Pipe Size	Outside Diameter			Inside Dia. of Large and Small Tongue	Outside Diameter			Inside Diam. of Large and Small Groove	Diameter of Raised Face min.	
	Large Male and Large Tongue	Small Male	Small Tongue		Large Female and Large	Small Female	Small Groove		Small Female and Groove	Large Female and Groove
	g	S	T	U	W	X	Y	Z	K	L
1/2"	1.38	0.72	1.38	1.00	1.44	0.78	1.44	0.94	1.75	1.81
	35.1	18.3	35.1	25.4	36.61	19.8	36.6	23.9	44.5	46.0
3/4"	1.69	0.94	1.69	1.31	1.75	1.00	1.75	1.25	2.06	2.12
	42.9	23.9	42.9	33.3	44.5	25.4	44.5	31.8	52.3	53.8
1"	2.00	1.19	1.88	1.50	2.06	1.25	1.94	1.44	2.25	2.44
	50.8	30.2	47.8	38.1	52.3	31.8	49.3	36.6	57.2	62.0
11/4"	2.50	1.50	2.25	1.88	2.56	1.56	2.31	1.81	2.62	2.94
	63.5	38.1	57.2	47.8	65.0	39.6	58.7	46.0	66.5	74.7
11/2"	2.88	1.75	2.50	2.12	2.94	1.81	2.56	2.06	2.88	3.31
	73.2	44.5	63.5	53.8	74.7	46.0	65.0	52.3	73.2	84.1
2"	3.62	2.25	3.25	2.88	3.69	2.31	3.31	2.81	3.62	4.06
	91.9	57.2	82.6	73.2	93.7	58.7	84.1	71.4	91.9	103.1
21/2"	4.12	2.69	3.75	3.38	4.19	2.75	3.81	3.31	4.12	4.56
	104.6	68.3	95.3	85.9	106.4	69.9	96.8	84.1	104.6	115.8
3"	5.00	3.31	4.62	4.25	5.06	3.38	4.69	4.19	5.00	5.44
	127.0	84.1	117.3	108.0	128.5	85.9	119.1	106.4	127.0	138.2
31/2"	5.50	3.81	5.12	4.75	5.56	3.88	5.19	4.69	5.50	5.94
	139.7	96.8	130.0	120.7	141.2	98.6	131.8	119.1	139.7	150.9
4"	6.19	4.31	5.69	5.19	6.25	4.38	5.75	5.12	6.19	6.62
	157.2	109.5	144.5	131.8	158.8	111.3	146.1	130.0	157.2	168.1

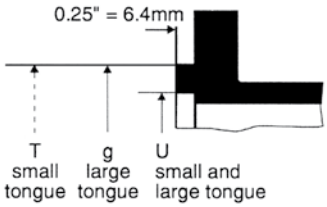
Large male and female face and large tongue and groove are not applicable to Class 150 because of potential dimensional conflicts.

150 - 2500lb/sq.in. ANSI B16-5









Nom. Pipe Size	Outside Diameter			Inside Dia. of Large and Small Tongue	Outside Diameter			Inside Diam. of Large and Small Groove	Diameter of Raised Face min.	
	Large Male and Large Tongue g	Small Male S	Small Tongue T	U	Large Female and Large W	Small Female X	Small Groove Y	Z	Small Female and Groove K	Large Female and Groove L
5"	7.31	5.38	6.81	6.31	7.38	5.44	6.88	6.25	7.31	7.75
	185.7	136.7	173.0	160.3	187.5	138.2	174.8	158.8	185.7	196.9
6"	8.50	6.38	8.00	7.50	8.56	6.44	8.06	7.44	8.50	8.94
	215.9	162.1	203.2	190.5	217.4	163.6	204.7	189.0	215.9	227.1
8"	10.62	8.38	10.00	9.38	10.69	8.44	10.06	9.31	10.62	11.06
	269.7	212.9	254.0	238.3	217.5	214.4	255.5	236.5	269.7	280.9
10"	12.75	10.50	12.00	11.25	12.81	10.56	12.06	11.19	12.75	13.19
	323.9	266.7	304.8	285.8	325.4	268.3	306.3	284.2	323.9	335.0
12"	15.00	12.50	14.25	13.50	15.06	12.56	14.31	13.44	15.00	15.44
	381.0	317.5	362.0	342.9	382.5	319.0	363.5	341.4	381.0	392.2
14"	16.25	13.75	15.50	14.75	16.31	13.81	15.56	14.69	16.25	16.69
	412.8	349.3	393.7	374.7	414.3	350.8	395.2	373.1	412.8	423.9
16"	18.50	15.75	17.62	16.75	18.56	15.81	17.69	16.69	18.50	18.94
	469.9	400.1	447.5	425.5	471.4	401.6	449.3	423.9	469.9	481.1
18"	21.00	17.75	20.12	19.25	21.06	17.81	20.19	19.19	21.00	21.44
	533.4	450.9	511.0	489.0	534.9	452.4	512.8	487.4	533.4	544.6
20"	23.00	19.75	22.00	21.00	23.06	19.81	22.06	20.94	23.00	23.44
	584.2	501.7	558.8	533.4	585.7	503.2	560.3	531.9	584.2	595.4
24"	27.25	23.75	26.25	25.25	27.31	23.81	26.31	25.19	27.25	27.69
	692.2	603.3	666.8	641.4	693.7	604.8	668.3	639.8	692.2	703.3

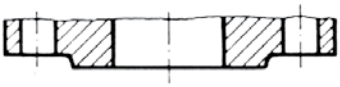
Large male and female face and large tongue and groove are not applicable to Class 150 because of potential dimensional conflicts.

Flat Face Flange

Form A
Simple Face

Form B
Face RZ = 160, machined (not finer than 40 m)

Face Flange



Form C
Face RZ = 160 (not finer than 40 m), machined

Form D
Face RZ = 40, machined

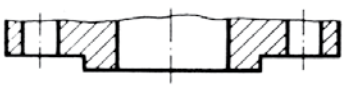
Form E
Face RZ = 16, machined

Flange with Integrated Sealing

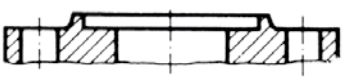
Form F
Tongue as per DIN 2512

Form N
Groove as per DIN 2512

Form V 13
Projection as per DIN 2513



Form R 13
Recess as per DIN 2513



Form V 14
Projection as per DIN 2514

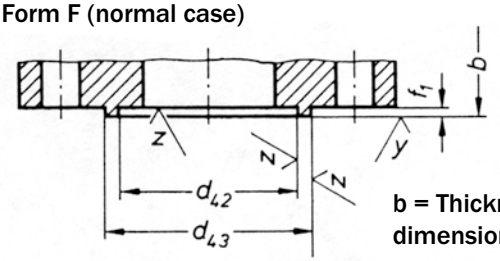
Form R 14
Recess as per DIN 2514

Form M
Bevel for Diaphram Seal as per DIN 2695

Form L
Lens Ring Face

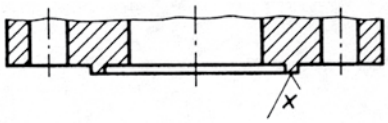
Flanges, groove and tongue, nominal pressure 10 to 160 design sizes, rings
Dimensions in mm

Tongue
Form F (normal case)

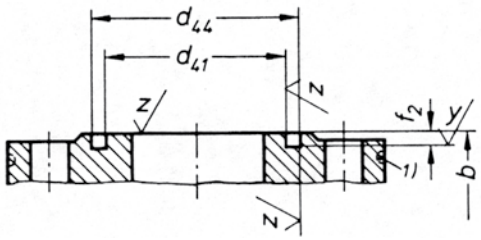


b = Thickness as per dimension standard

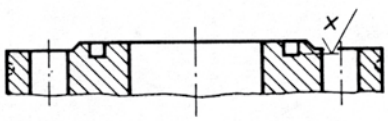
Form FA (special case)
Other dimensions and indications as Form F



Groove
Form N (normal case)



Form V 14
Form NA (special case)
Other dimensions and indications as Form N



$$\sqrt{z} = \sqrt{Rz = 160}$$

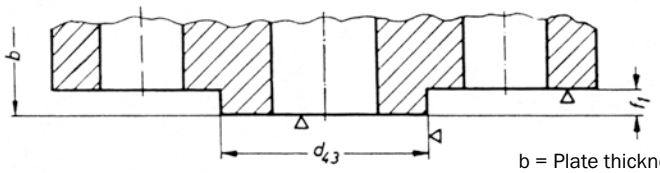
$$\sqrt{z} = \sqrt{\text{rotated } Rz = 160}$$

$$\sqrt{z} = \sqrt{\text{rotated } Rz = 160}$$

Flanges
Projection and Recess
Nominal Pressures 10 to 100

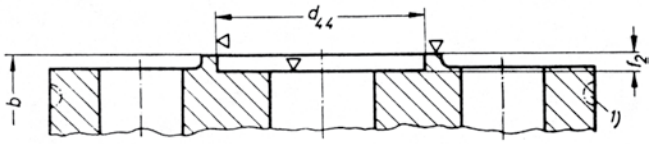
Dimensions in mm

Projection Flange
Form V 13



b = Plate thickness as per standard

Recess Flange
Form R 13



Nominal Bore	Projection d_{43} -0.5	f_1 +0.5	Recess d_{44} +0.5	f_w -0.5
10	34	4	35	3
15	39	4	40	3
20	50	4	51	3
25	57	4	58	3
32	65	4	66	3
40	75	4	76	3
50	87	4	88	3
65	109	4	110	3
80	120	4	121	3
100	149	4.5	150	3.5
125	175	4.5	176	3.5
150	203	4.5	204	3.5
(175)	233	4.5	234	3.5
200	259	4.5	260	3.5
250	312	4.5	313	3.5
300	363	4.5	364	3.5
350	421	5	422	4
400	473	5	474	4
500	575	5	576	4
600	675	5	676	4
700	777	5	778	4
800	882	5	883	4
900	987	5	988	4
1000	1091	6	1092	5

Nominal bore in brackets to be avoided if possible.

1) Recess Flanges can be marked with groove at outside if required

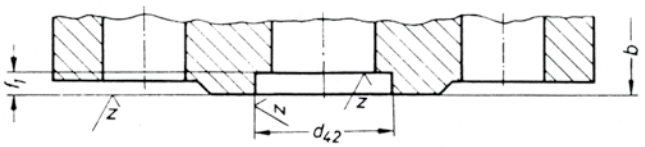
Flanges, Table see DIN 2500
Flanges, Types of contact faces see DIN 2526
Steel Flanges, technical delivery conditions see DIN 2519
Flat Ring Gasket for Flanges with projection and recess see DIN 2692

Flanges groove for rubber seal ring
Nominal Pressures 10 to 40 design sizes

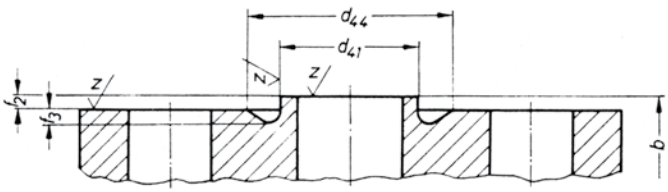
Dimensions in mm

This norm is valid in connection with the corresponding dimensional standards for flanges.
The lens ring face can be used also for plain flanges or flanges with sealing ring.

Recess
Form R

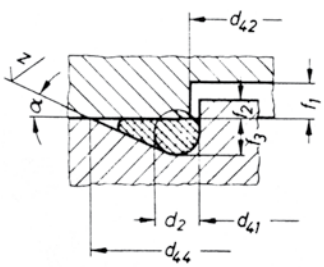


Projection
Form V



rotated
z = Rz = 160

Dimensions for assembly
b = plate thickness as per standard



TYPES OF VALVE

BOLTED BONNET VALVES	• GATE VALVE • GLOBE VALVES • SWING CHECK VALVES • PISTON CHECK VALVES • TILTING DISC CHECK VALVES • Y PATTERN GLOBE VALVES
PRESSURE SEAL VALVES	• GATE VALVES • GLOBE VALVES • SWING CHECK VALVES • PISTON CHECK VALVES • TILTING DISC CHECK VALVES • Y PATTERN GLOBE VALVES
API 6D VALVES	THROUGH CONDUIT GATE VALVES FULL-OPENING SWING CHECK VALVES REDUCED OPENING SWING CHECK VALVES
WAFER CHECK VALVES	
CRYOGENIC SERVICE VALVES	
SPECIAL SERVICES VALVES	• 3-WAYS GLOBE VALVES • SLUICE GATE VALVES • JACKETED VALVES • BELLOW SEAL VALVES • CAST STAINLESS STEEL GATES VALVES ACC. API 603 • BLOCK & BLOOED GATES VALVES

GATE VALVES – Standard – Cryogenic – Bellow Seals

Cast Steel	Type	Bolted Bonnet, OS&Y					
	Class	150	300	600	900	1500	2500
	Sizes	2"–56"	2"–48"	2"–48"	2"–24"	2"–24"	2"–12"
	Ends	RF – RTJ – BW					
Forged Steel	Type	Bolted Bonnet, OS&Y					
	Class	150	300	600	1500	2500	
	Sizes	1/2"–2"					
	Ends	RF – RTJ – BW					
	Type	Bolted Bonnet, OS&Y					
	Class	800		1500		2500	
	Sizes	1/4"–2"					
	Ends	NPT – SW – BW					
	Type	Seal Weldet Bonnet, OS&Y					
	Class	300	600	1500	2500		
	Sizes	1/4"–2"					
	Ends	NPT – SW – RF – RTJ – BW					

GLOBE VALVES – Straight Pattern, Standard – Cryogenic, Bellow Seal

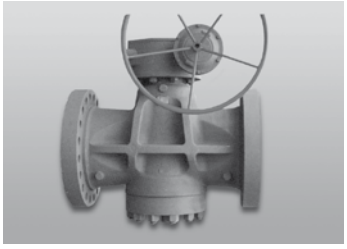
Cast Steel	Type	Bolted Bonnet, OS&Y							
	Class	150	300	600	900	1500	2500		
	Sizes	2"–16"	2"–16"	2"–12"	2"–10"	2"–8"	2"–8"		
	Ends	RF – RTJ – BW							
Forged Steel	Type	Bolted Bonnet, OS&Y							
	Class	150	300	600	1500	2500			
	Sizes	1/2"–2"							
	Ends	RF – RTJ – BW							
	Type	Bolted Bonnet, OS&Y			Seal Welded Bonnet				
	Class	800	1500	2500	800	1500	2500	4500	
	Sizes	1/4"–2"			1/4"–2"				
	Ends	NPT – SW – BW			NPT – SW – BW				

GLOBE VALVES – Y-Pattern, Standard & Bellow Seal

Forged Steel	Type	Seal Weldet Bonnet, OS&Y			
	Class	800	1500	2500	4500
	Sizes	1/4"–4"			
	Ends	NPT – SW – BW – RF – RTJ			

SWING CHECK, PISTON CHECK, WAFER CHECK VALVES

Cast Steel	Type	Bolted Cover					
	Class	150	300	600	900	1500	2500
	Sizes	2"–48"	2"–36"	2"–36"	2"–24"	2"–24"	2"–12"
	Ends	RF – RTJ – BW – WAFER					
Forged Steel	Type	Bolted Cover					
	Class	150	300	600	1500	2500	
	Sizes	1/2"–2"					
	Ends	RE – RTJ – BW					
	Type	Bolted Cover			Seal Welded Cover				
	Class	800	1500	2500	800	1500	2500	4500	
	Sizes	1/4"–2"			1/4"–2"				
	Ends	NPT – SW – BW			NPT – S≤W – BW				



PISTON CHECK, BALL CHECK & SWING CHECK VALVES

Forged Steel	Type	Straight-Bolted C			Y-Pattern, Seal Weld. Cover			
	Class	800	1500	2500	800	1500	2500	4500
	Sizes	1/4"–2"			1/4"–2"			
	Ends	NPT – SW – BW			NPT – SW – BW			

PRESSURE SEAL VALVES, CAST & FORGED STEEL

Gate	Class	600	900	1500	2500	4500
	Sizes	2"–24"	2"–24"	2"–24"	2"–14"	2"–3"
	Ends	RF – RTJ – BW				
Globe & Stop Check	Class	600	900	1500	2500	4500
	Sizes	2"–16"	2"–16"	2"–12"	2"–12"	2"–3"
	Ends	RF – RTJ – BW				
Swing Check & Tilting Disk Check	Class	600	900	1500	2500	
	Sizes	2"–16"	2"–16"	2"–12"	2"–12"	
	Ends	RF – RTJ – BW				
Piston Check	Class	600	900	1500	2500	4500
	Sizes	2"–12"	2"–12"	2"–12"	2"–12"	2"–3"

THROUGH CONDUIT GATE VALVES, CAST STEEL

Slab Gate	Class	150	300	600	900	1500	2500
	Sizes	2"–48"	2"–48"	2"–36"	2"–24"	2"–16"	2"–12"
	Ends	RF – RTJ – BW					
Expanding Gate	Class	150	300	600	900	1500	2500
	Sizes	2"–36"	2"–36"	2"–36"	2"–24"	2"–16"	2"–12"
	Ends	RF – RTJ – BW					
Options	Gear Operator – Electric-Pneumatic, Hydraulic Actuators, Position Indicators – Stem Protection – Locking Devices, Soft Seals, Special Packings						

BALL VALVES – FULL BORE & REDUCED BORE, CAST & FORGED STEEL

Split Body, Bolted & Welded Construction	Class	150	300	600	900	1500	2500	API
	Sizes	1/2"–60"			1/2"–48"	1/2"–42"	1/2"–20"	1/2–30"
	Ends	RF – RTJ – BW						
1-Pce. Body Side Entry	Class	800				1500		
	Sizes	1/4"–4"				1/4"–4"		
	Ends	RF – RTJ – BW						
1-Pce. Body Top Entry	Class	150	300	600	900	1500	2500	API
	Sizes	1/2"–60"			1/2"–42"	1/2"–40"	1/2"–20"	1/2–30"
	Ends	RF – RTJ – BW						

BUTTERFLY VALVES – SOFT SEATED & METAL SEATED HIGH PERFORMANCE

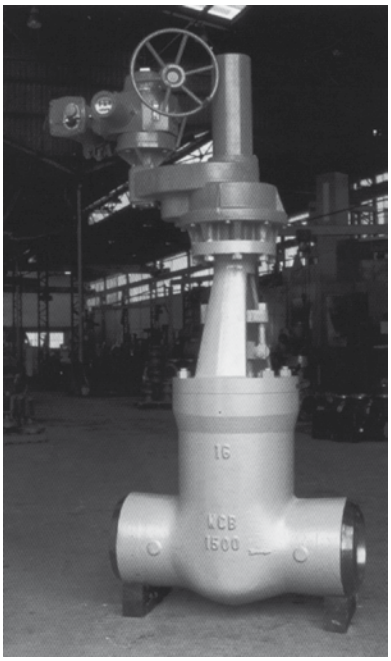
Materials	Cast Iron, Carbon Steel, Stainless Steel, Aluminium, Bronze & Alloys
Classes	ANSI 150 & ANSI 300
Sizes	1 1/2"–32" Wafer Type, 1 1/2"–16" Lug, 2"–72" Flanged

PLUG VALVES

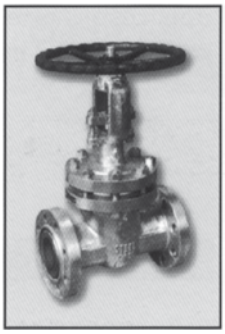
Lubricated 2-Way & 3-Way	Class	150	300	600	800/1500	900	1500	2500
	Sizes	1/2"–30"	1/2"–24"	1/2"–24"	1/4"–2"	1–16"	2–16"	2–12"
	Ends	RF – RTJ – BW			NPT – SW-RTJ – BW			
Non Lubricated 2-Way & 3-Way	Class	150 & 300			150 & 300			
	Sizes	1/2"–12"			1/2"–2 1/2"			
	Ends	RF – BW			NPT SW			

OTHER VALVES Diaphragm Valves; Needle/Gauge Valves, Cocks, Plastic Valves, Air Release & Vacuum Valves, Line Blinds, Traps, Strainers, Orifice Fittings

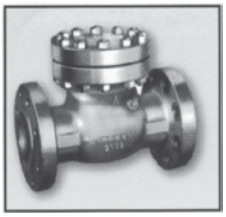
VALVE TPYE	PRESSURE CLASS	END CONNECTION	BODY MATERIALS	TRIM MATERIALS	OPERATION
Gate	Class 150	Flat Face	A 216-WCB	13%Cr	Handwheel
Globe	Class 300	Raised Face	A 216-WCC	304	Impact Handwheel
Swing Check	Class 600	Large Male	A 217-WC1	316	Chain
Piston Check	Class 900	Small Male	A 217-WC6	304-L	Bevel Gear
Tilting Disc	Class 1500	Large Female	A 217-WC9	316-L	Spur Gear
Globe Y Pattern	Class 2500	Small Female	A 217-C5	321	Pneumatic
	Class 4500	Large Tongue	A 217-C12	347	Hydraulic
		Small Tongue	A 217-C12A	51	Electric
		Large Groove	A 352-LCB	55	
		Small Groove	A 352-LCC	Bronze	
		R.T.J.	A 352-LC2	Monel	
		Buttwelded Ends	A 352-LC3	Hastelloy B	
		Threaded End	A 351-CF8	Hastelloy C	
			A 351-CF8M	B-473	
			A 351-CF3	(Alloy 420)	
			A 351-CF3M	Half Stellite	
			A 351-CF8C	Stellite	
			A-351-CD4Mcu		
			A 890-5A		
			A 351-CN7M		
			Hastelloy B		
			Hastelloy C		



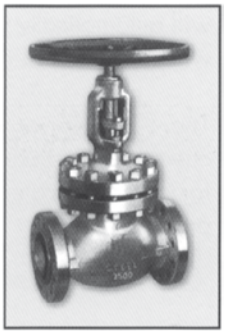
Pressure seal Gate valve



Gate valve



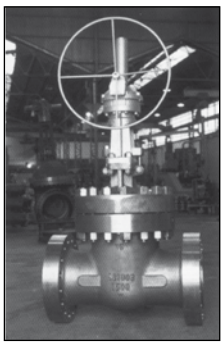
Swing Check valve



Globe valve

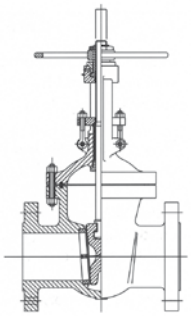
MANUFACTURING PROGRAM
Sizes are in inches

GATE VALVES

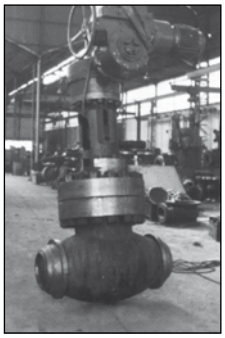


Bolted Bonnet Gate Valve with Spur and Bevel actuator.
Class: 1500#. Size: 16“

ANSI Class	SIZE From	To
150	2“	72“
300	2“	54“
600	2“	54“
900	2“	36“
1500	2“	24“
2500	2“	20“

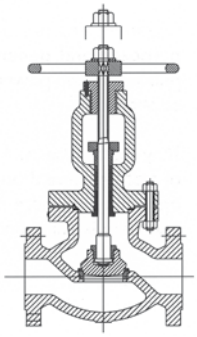


GLOBE VALVES

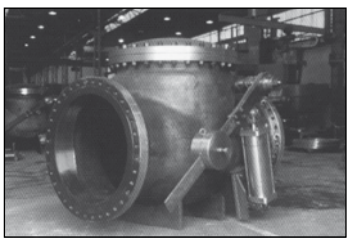


Bolted Bonnet Globe Valve with electric actuator.
Class: 1500#. Size: 16”

ANSI Class	SIZE From	To
150	2“	24“
300	2“	24“
600	2“	24“
900	2“	20“
1500	2“	18“
2500	2“	16“

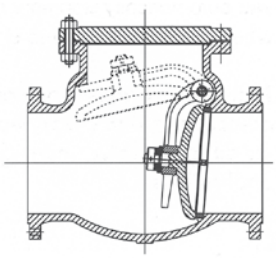


SWING CHECK VALVES



Swing Check Valve with damper.
Class: 150#. Size: 40“

ANSI Class	SIZE From	To
150	2“	64“
300	2“	54“
600	2“	54“
900	2“	36“
1500	2“	24“
2500	2“	20“

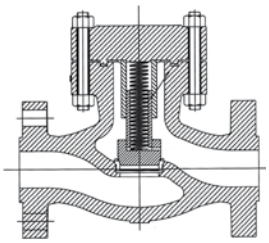


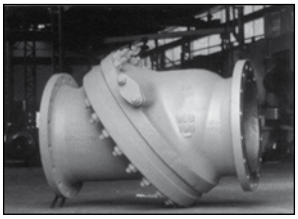
MANUFACTURING PROGRAM
Sizes are in inches

Piston Check Valve.
Class: 2500#. Size: 6“

PISTON CHECK VALVES

ANSI Class	SIZE From	To
150	2“	10“
300	2“	10“
600	2“	10“
900	2“	10“
1500	2“	10“
2500	2“	10“

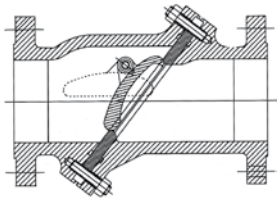




Tilting Disc Check Valve.
Class: 150#. Size: 18“

TILTING DISC CHECK VALVES

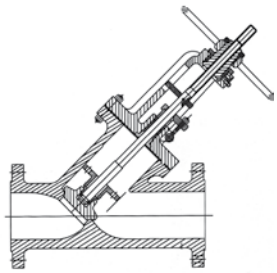
ANSI Class	SIZE From	To
150	2“	24“
300	2“	24“
600	2“	24“
900	2“	20“
1500	2“	18“
2500	2“	12“

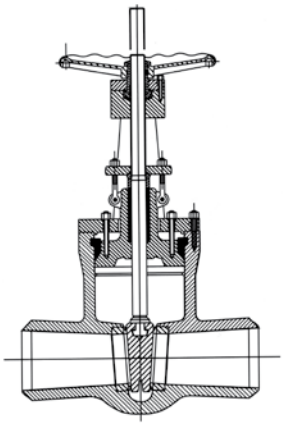


Y Pattern Globe Valve.
Class: 150#. Size: 5“

Y-PATTERN GLOBE VALVES

ANSI Class	SIZE From	To
150	2“	16“
300	2“	16“
600	2“	14“
900	2“	12“
1500	2“	12“
2500	2“	10“



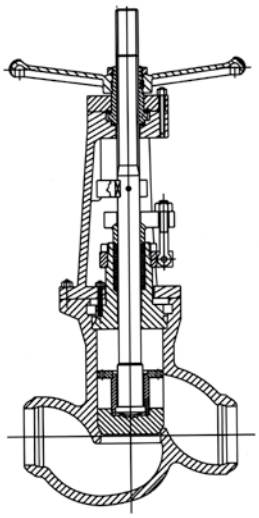


Manufacturing Programme
Sizes are in inches

GATE VALVES

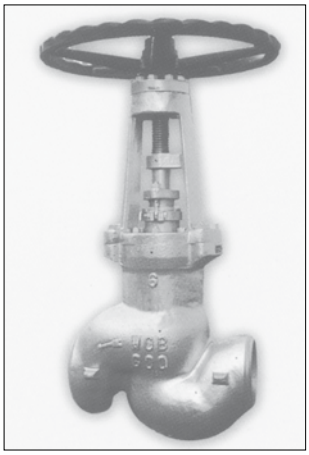
ANSI Class	SIZE From	To
600	2“	30“
900	2“	24“
1500	2“	24“
2500	2“	20“
4500	2“	8“

Pressure Seal Gate Valve.
Class: 600#. Size: 30“

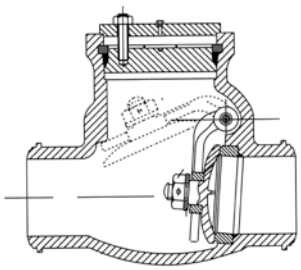


GLOBE VALVES

ANSI Class	SIZE From	To
600	2“	16“
900	2“	16“
1500	2“	16“
2500	2“	12“
4500	2“	6“



Pressure Seal Globe Valve.
Class: 600#. Size: 6“

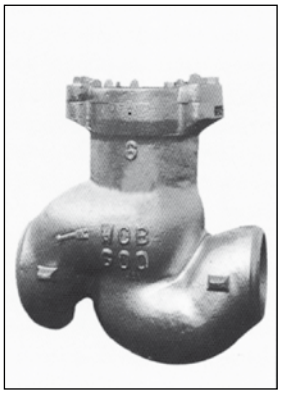


SWING CHECK VALVES

ANSI Class	SIZE From	To
600	2“	30“
900	2“	24“
1500	2“	24“
2500	2“	20“
4500	2“	8“

Pressure Seal Swing Check Valve.
Class: 2500#. Size: 20“

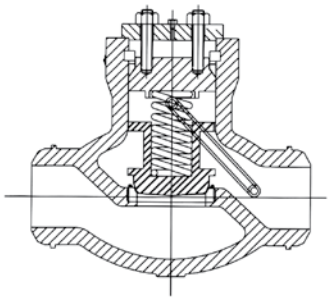
Manufacturing Programme
Sizes are in inches

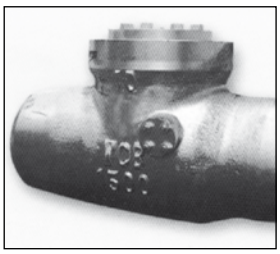


Pressure Seal Piston check Valve.
Class: 600#. Size: 6“

PISTON CHECK VALVES

ANSI Class	SIZE From	To
600	2“	16“
900	2“	16“
1500	2“	16“
2500	2“	12“
4500	2“	8“

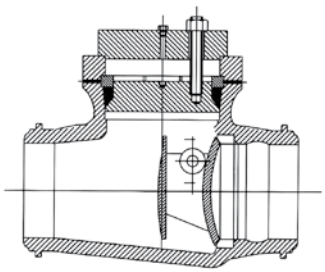




Pressure Seal Tilting disc check Valve.
Class: 1500#. Size: 10“.

TILTING DISC VALVES

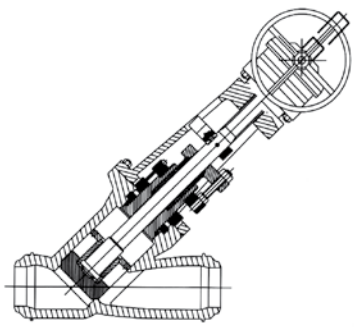
ANSI Class	SIZE From	To
600	2“	30“
900	2“	24“
1500	2“	24“
2500	2“	16“
4500	2“	8



Y Pattern Globe Valve.
Class: 150#. Size: 6”

Y PATTERN GLOBE VALVES

ANSI Class	SIZE From	To
600	2“	14“
900	2“	12“
1500	2“	12“
2500	2“	10“

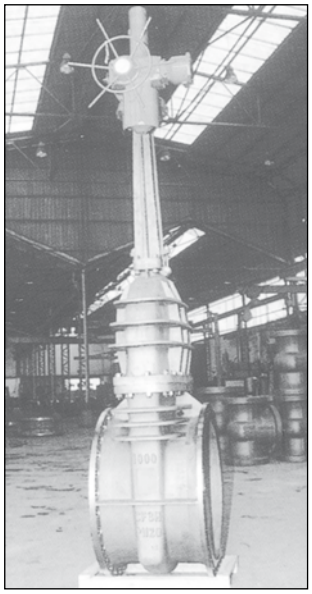


Cast Stainless Steel Gate Valves API 603

Grades of CF8M, CF8, CF3M, etc. are made to ANSI Class 150, with wall thicknesses to B 16.34.

Evntually we will be able to supply ANSI Class 300.

ANSI Class	SIZE From	To
150	2“	48“



Gate Valve, size 40“, class 150, manufactured in stainless steel CF3M for Desalination Plant.

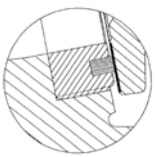
Block & Bleed Gate Valves

The Block and Bleed Gate Valves are used to prevent different types of fluids from mixing.

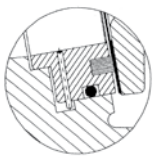
These valves provide a seal in both directions at pressures ranging from zero to maximum working
pressure, regardless of fluctuations in pressure, pressure differentials or the direction of flow.

ANSI Class	SIZE From	To
150	2“	48“
300	2“	36“

Block & Bleed gate valve. Class: 150#. Size: 28“.



Detail of seal with Teflon insert for bores Of 2“ to 12“.



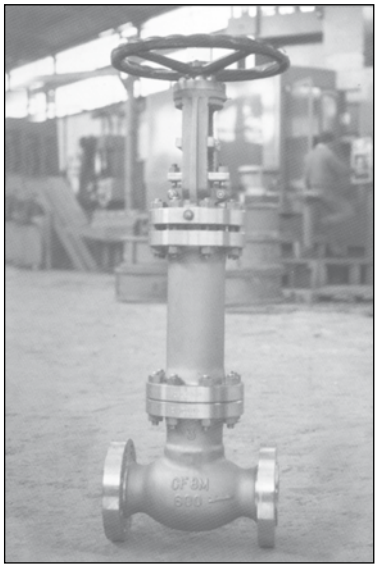
Detail of seal with floating rings for bores Of 14“ and above.

for use in critical applications in the chemical, petrochemical, oil and gas, nuclear power, cryogenic industries, etc.

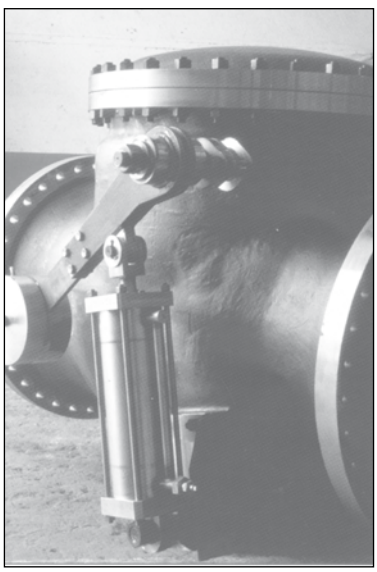
SPECIAL SERVICE VALVES:

- JACKETED VALVES
- 3-WAY GLOBE VALVES
- BELLOW SEAL VALVES
- SLUICE GATE VALVES
- CRYOGENIC SERVICE VALVES
- WAFER TYPE GATE VALVES

Gate Valve Wafer type. Size 36“

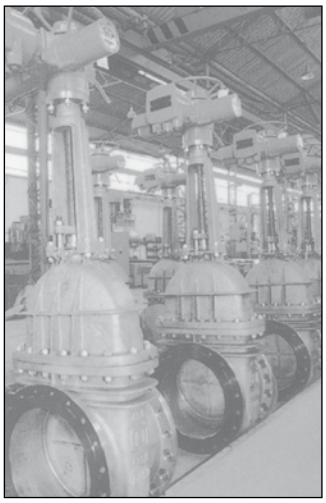


Bolted Bonnet Globe Valve with Bellow. Class: 600 #. Size: 3“.

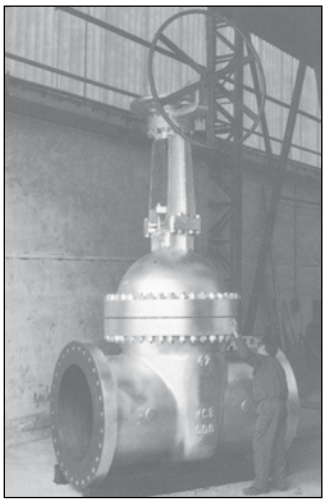


Swing check Valve with damper.

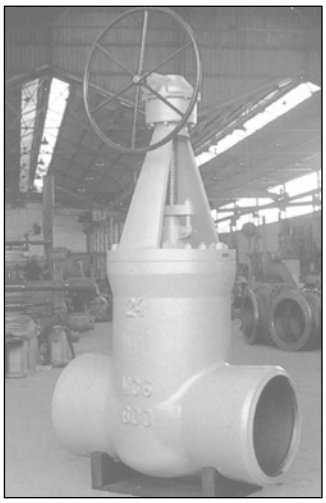
Jacketed Valves, Gate and swing check.



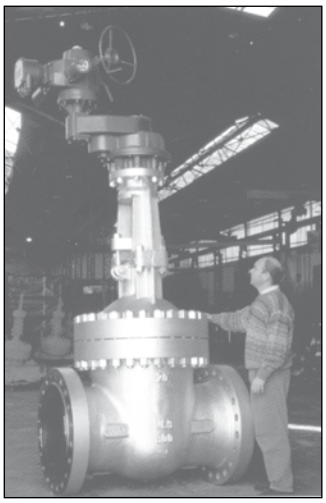
Gate Valves in stainless eqipped with electric actuator



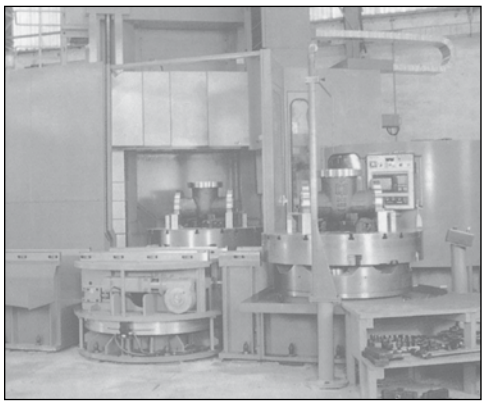
Bolted Bonnet
Gate Valve.
Class: 600 #. Size: 48“.



Pressure Seal Gate valve.
Class: 600 #. Size: 24“

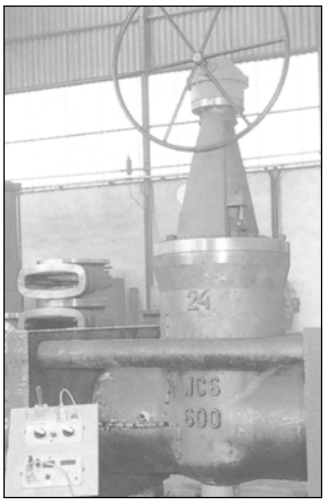


Bolted Bonnet
Gate Valve.
Class: 900#. Size: 20“.



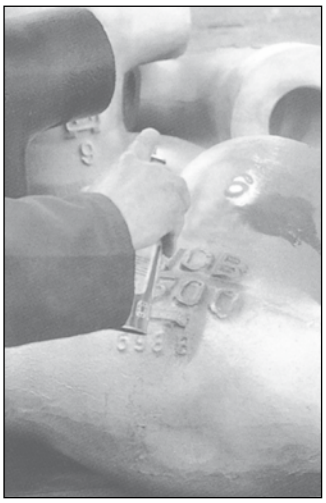
CNC Machine Centre.

Pressure seal gate valve

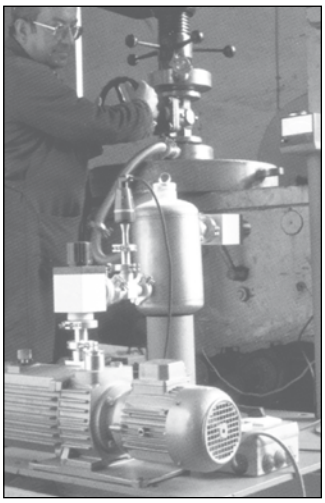


Stress checking test

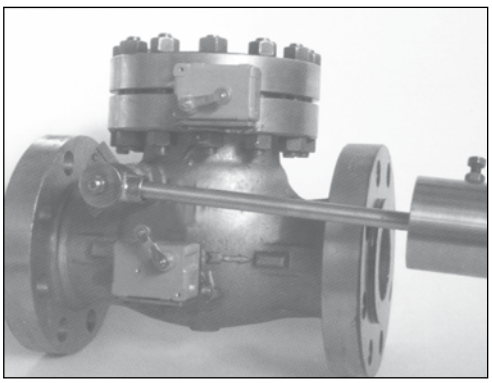
Dual plate wafer check valve.
Class: 900#. Size: 36“



Dye penetrating inspection.



Vacuum test.



Bolted Bonnet swing check valve.
Class: 1500#. Size: 4“.

Globe Bellow Valves

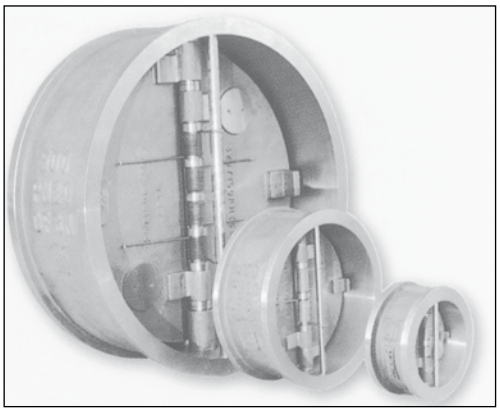
Dual Plate Wafer Check Valves

Is a check valve for general use, characterised by its reduced weight.

Due to the wide range of build materials (carbon, alloy or stainless steel, etc.) it can meet any service requirements.

The continuous spring force applied to the disc prevents any back-flow through the valve, providing a smooth, noise-free action.

ANSI Class	SIZE From	To
125	2“	72“
150	2“	54“
300	2“	54“
600	2“	36“
900	2“	24“
1500	2“	20“
2500	2“	36“

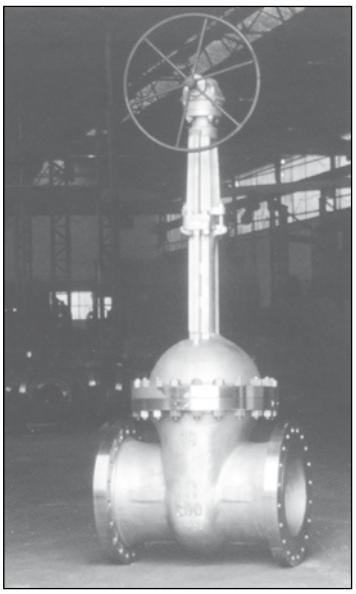


Dual plate wafer check valves.

CRYOGENIC SERVICE VALVES

Cryogenic valves, in gate, globe and check types for the production, storage and transfer of liquefied gases such as nitrogen, oxygen, natural gas, argon, hydrogen, methane, carbon dioxide, etc.

Lazaro Ituarte produce special extended bonnet stainless steel valves that offer excellent impact strength, minimal heat loss and protection against corrosion.



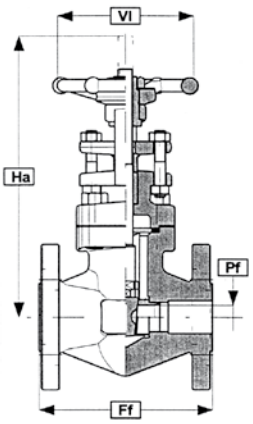
Cryogenic Gate Valve.
Class: 300#. Size: 16“ in stainless steel CF8

CRYOGENIC GATE VALVES

ANSI Class	SIZE From	To
150	2“	24“
300	2“	24“
600	2“	24“
900	2“	16“

CRYOGENIC GLOBE VALVES

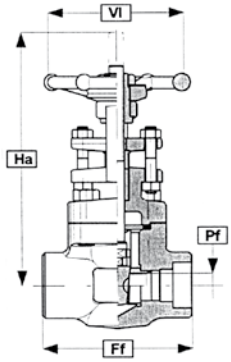
ANSI Class	SIZE From	To
150	2“	12“
300	2“	12“
600	2“	8“
900	2“	8“



Production range

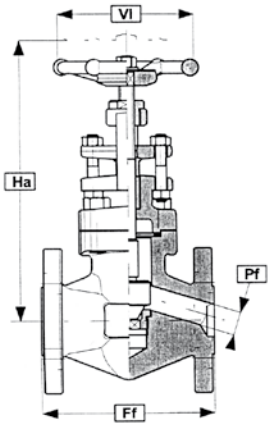
Type

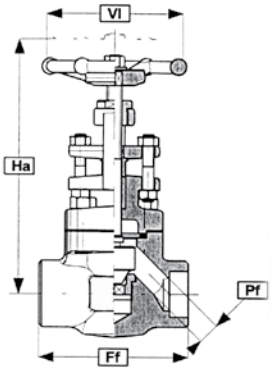
Gate, Globe/Stop/Needle, Piston/Ball/Swing-check, Drop & Block check
(Urea Service)
Body joining
Bolted and Welded bonnet (seal or full penetration), Bonnetless and
Pressure seal
Execution
Straight, Y pattern & Angle, Bellows Seals, Cryogenic service, Vacuum
service, OS&Y, ISRS, ...
Motorized
with Electric, Pneumatic actuators, ...



Sizes

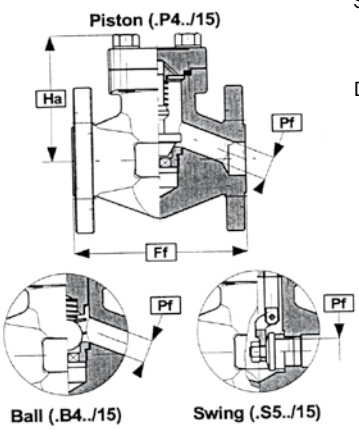
1/4“ to 2“ reduced and full bore (Urea service up to 8“)
End connections
SW, Threaded, BW, Hub and Flanged (integral type)
Rating
ANSI class 150 to 4500 lbs



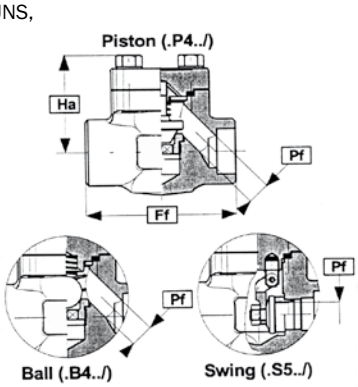


Materials

Carbon steel
– ASTM A105
Killed Carbon steel
– ASTM A350 / LF2
Alloy steel
– ASTM A182 – F5, F9, F11, F22, F91
Stainless steel
– ASTM A182/F304(L), F316(L), F317, F321, F347, F44
Special Alloy
– Monel, Inconel, Incoloy, Hastelloy, UNS, Alloy 20, Sanicro 28, Titanium, ...
Duplex
– ASTM A 182/F51, F53, F55

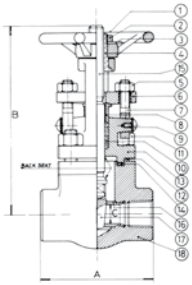


Material Test Report
NDE, Mechanical and Chemical Analysis
Hydro Test
Air Test
Performance Test
Cryogenic Test
Special tests available on request

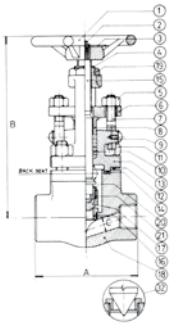


Bolted Bonnet - O.S. & Y.I
Class 800 lbs

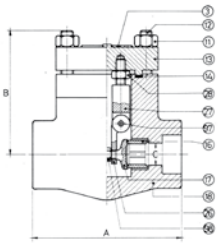
Forged Steel Gate, Globe, Check Valves
Carbon, Alloy, Stainless Steel and Special Materials
Screwed or Socket Weld Ends - Full Port



Gate Valves
type BSC 800 FB



Globe & Needle Valves
type BBD 0800 FB
* Button head up to
ND 25 size



Swing Check Valves
type CKB 800 FB
or Piston Check Valves
type CKP 800 FB
or Ball Check Valves
type CKS 800 FB

CLASS	ND mm.	OUR TYPE	END TO END 'A' mm.	PORT DIAM. 'C' mm.
800 Lbs • 138 bar at - 30 + 38°c	8	**BSC 801 FB**	60.3	6.5
	10	**BSC 802 FB**	60.3	8
	15	**BSC 803 FB**	89	12.7
	20	**BSC 804 FB**	105	19
	25	**BSC 805 FB**	127	24
	40	**BSC 807 FB**	171.4	38
	50	**BSC 808 FB**	184	50
800 Lbs • 138 bar at - 30 + 38°c	8	**BBD 0801 FB**	60.3	06.5
	10	**BBD 0802 FB**	60.3	7
	15	**BBD 0803 FB**	89	12
	20	**BBD 0804 FB**	105	17.5
	25	**BBD 0805 FB**	127	22
	40	**BBD 0807 FB**	171.4	32
	50	**BBD 0808 FB**	184	44.4
800 Lbs • 138 bar at - 30 + 38°C	15	**CKB 803 FB**	89	12
	20	**CKB 804 FB**	105	17.5
	25	**CKB 805 FB**	127	22
	40	**CKB 807 FB**	171.4	32
	50	**CKB 808 FB**	184	44.4
800 Lbs • 138 bar at -30 + 38°C	8	**CKP 801 FB**	60.3	6. 5
	10	**CKP 802 FB**	60.3	7
	15	**CKP 803 FB**	89	12
	20	**CKP 804 FB**	105	17.5
	25	**CKP 805 FB**	127	22
	40	**CKP 807 FB**	171.4	32
	50	**CKP 808 FB**	184	44.4
800 Lbs • 138 bar at -30 + 38°C	8	**CKS 801 FB**	60.3	6.5
	15	**CKS 802 FB**	60.3	7
	20	**CKS 803 FB**	89	12
	25	**CKS 804 FB**	105	17.5
	30	**CKS 805 FB**	127	22
	40	**CKS 807 FB**	171.4	32
	50	**CKS 808 FB**	184	44.4

BODY MATERIAL	
A	A105
B	A182 GR F1
C	A182 GR F5
D	A182 Gr F9
E	A182 Gr. F11
F	A182 Gr F12
G	A182 Gr F22
H	A182 Gr F304
I	A182 Gr F304L
L	A182 Gr F316
M	A182 Gr F316L
N	A182Gr F321
O	A182 Gr F347
P	A350 Gr LF2
Q	A350 Gr LF3
R	Monel
S	Inconel
T	Titanium
U	Incoloy 825
Y	UNS N08904
K	Duplex 2205
J	254 SMO

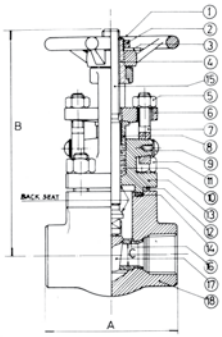
TRIM MATERIAL	
A	13% CR
B	13% Cr St
H	A182-F304
D	A182-F304 St
L	A182-F316
F	A182-F316 St
N	A182-F321
P	A182-F321 St
R	Monel
S	Inconel
T	Titanium
U	Incoloy 825
Y	UNS N08904
J	UNS N08904 St
X	Hastelloy C
M	A 182-F316L
C	Bronze
Q	Monel PTFE
E	Soft Seal
K	Duplex 2205
V	254 SMO

St = Stellite

Ref.	Part. Name
32	REGULATING NEEDLE
21	RING IN TWO HALVES
20	DISC NUT
19	YOKE RETAINING NUT
18	BODY
17	DISC
16	SEAT
15	STEM
14	GASKET
13	BONNET
12	STUD BOLTS
11	NUT
10	PACKING
9	EYEBOLTS UNIT
8	PACKING GLAND
7	EYEBOLTS
6	GLAND FLANGE
5	NUT
4	YOKE NUT
3	NAME PLATE
2	BOLT
1	HANDWHEEL

Note: For reference to items number add to the base drawing number a stroke then item no.
i.e BSC 803 FB/18 means body for Gate Valve class 800 FB. Size 15 mm.
• RATING FOR CARBON STEEL TO ANSI B 16.34 EDITION 1977#
Standard API 602 & BS 5352

Forged Steel Gate, Globe, Check Valves
Carbon, Alloy, Stainless Steel and Special Materials
Screwed or Socket Weld Ends - Reduced Port



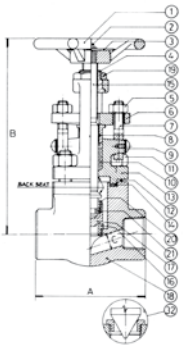
Gate Valves
Type BSC 800 RB

CLASS	ND mm.	OUR TYPE	END TO END 'A' mm.	PORT DIAM. 'C' mm.
800 Lbs • 138 bar at -30 + 38° C	15 20 25 40 50	**BSC 803 RB** **BSC 804 RB** **BSC 805 RB** **BSC 807 RB** **BSC 808 RB**	70 89 105 140 171.4	11 12.7 19 30 38
800 Lbs • 138 bar at - 30 + 38° C	15 20 25 40 50	**BBD 0803 RB** **BBD 0804 RB** **BBD 0805 RB** **BBD 0807 RB** **BBD 0808 RB**	70 89 105 140 171.4	7 12 17.5 29 32
800 Lbs • 138 bar at - 30 + 38° C	15 20 25 40 50	**CKP 803 RB** **CKP 804 RB** **CKP 805 RB** **CKP 807 RB** **CKP 808 RB**	70 89 105 140 171.4	7 12 17.5 29 32
800 Lbs • 138 bar at -30 + 38° C	15 20 25 40 50	**CKS 803 RB** **CKS 804 RB** **CKS 805 RB** **CKS 807 RB** **CKS 808 RB**	70 89 105 140 171.4	7 12 17.5 29 32

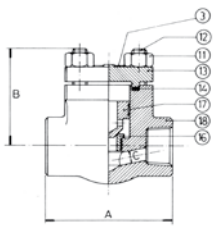
BODY MATERIAL	
A	105
B	A182 GR F1
C	A182 GR F5
D	A182 Gr F9
E	182 Gr. F11
F	A182 Gr F12
G	A182 Gr F22
H	A182 Gr F304
I	A182 Gr F304L
L	A182 Gr F316
M	A182 Gr F316L
N	A182Gr F321
O	A182 Gr F347
P	A350 Gr LF2
Q	A350 Gr LF3
R	Monel
S	Inconel
T	Titanium
U	Incoloy 825
Y	UNS N08904
K	Duplex 2205
J	254 SMO

TRIM MATERIAL	
A	13% CR
B	13% Cr St
H	A182-F304
D	A182-F304 St
L	A182-F316
F	A182-F316 St
N	A182-F321
P	A182-F321 St
R	Monel
S	Inconel
T	Titanium
U	Incoloy 825
Y	UNS N08904
J	UNS N08904 St
X	Hastelloy C
M	A 182-F316L
C	Bronze
Q	Monel PTFE
E	Soft Seal
K	Duplex 2205
V	254 SMO

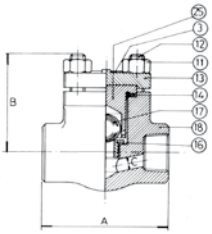
St = Stellite



Globe & Needle Valves
type BBD 0800 RB
*Button head up to ND 25 size



Piston Check Valves
type CKP 800 RB



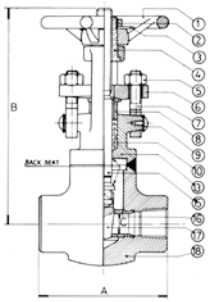
Ball Check Valves
type CKS 800 RB

Ref.	Part. Name
32	REGULATING NEEDLE
21	RING IN TWO HALVES
20	DISC NUT
19	YOKE RETAINING NUT
18	BODY
17	DISC
16	SEAT
15	STEM
14	GASKET
13	BONNET
12	STUD BOLTS
11	NUT
10	PACKING
9	EYEBOLTS UNIT
8	PACKING GLAND
7	EYEBOLTS
6	GLAND FLANGE
5	NUT
4	YOKE NUT
3	NAME PLATE
2	BOLT
1	HANDWHEEL

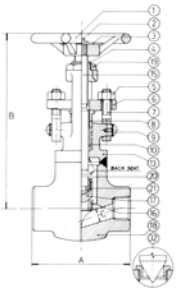
Note: For reference to items number add to the base drawing number a stroke then item no.
i.e BSC 803 RB/18 means body for Gate Valve BSC 800 RB. Size 15 mm.
• RATING FOR CARBON STEEL TO ANSI B 16.34 EDITION 1977
STANDARD API 602 & BS 5352

Welded Bonnet - O.S. & Y.
Class 800 lbs

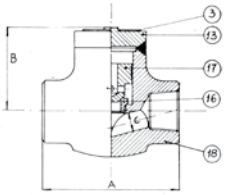
Forged Steel Gate, Globe, Check Valves
Carbon, Alloy, Stainless Steel and Special Materials
Screwed or Socket Weld Ends
Full Penetration Welded Bonnet - Reduced or Full Port



Gate Valves
type WSC 800 RB
or WSC 800 FB



Globe & Needle Valves
type WBD 0800 RB
or WBD 0800 FB
Button head up to
ND 25 size



Piston Check Valves
type WCKP 800 RB
or WCKP 800 FB

CLASS	ND mm.	OUR TYPE	END TO END 'A' mm.	PORT DIAM. 'C' mm.
800 Lbs • 138 bar at - 30 + 38° C	15 20 25 40 50	**WSC 803 RB** **WSC 804 RB** **WSC 805 RB** **WSC 807 RB** **WSC 808 RB**	70 89 105 140 171.4	11 12.7 19 30 38
800 Lbs • 138 bar at - 30 + 38° C	8 10 15 20 25 40 50	**WSC 801 FB** **WSC 802 FB** **WSC 803 FB** **WSC 804 FB** **WSC 805 FB** **WSC 807 FB** **WSC 808 FB**	60.3 60.3 89 105 127 171.4 184	6.5 8 12.7 19 24 38 50
800 Lbs • 138 bar at - 30 + 38° C	15 20 25 40 50	**WBD 0803 RB** **WBD 0804 RB** **WBD 0805 RB** **WBD 0807 RB** **WBD 0808 RB**	70 89 105 140 171.4	7 12 17.5 29 32
800 Lbs • 138 bar at -30 + 38° C	8 10 15 20 25 40 50	**WBD 0801 FB** **WBD 0802 FB** **WBD 0803 FB** **WBD 0804 FB** **WBS 0805 FB** **WBD 0807 FB** **WBD 0808 FB**	60.3 60.3 89 105 127 171.4 184	6.5 7 12 17.5 22 32 44.4
800 Lbs • 138 bar at -30 + 38° C	15 20 25 40 50	**WCKP 803 RB** **WCKP 804 RB** **WCKP 805 RB** **WCKP 807 RB** **WCKP 808 RB**	70 89 105 140 172	7 12 17.5 29 32
800 Lbs • 138 bar at - 30 + 38° C	15 20 25 40 50	**WCKP 803 FB** **WCKP 804 FB** **WCKP 805 FB** **WCKP 807 FB** **WCKP 808 FB**	89 105 127 172 184	12 17.5 22 32 44

BODY MATERIAL	
A	A105
B	A182 GR F1
C	A182 GR F5
D	A182 Gr F9
E	A182 Gr. F11
F	A182 Gr F12
G	A182 Gr F22
I	A182 Gr F304L
L	A182 Gr F316
M	A182 Gr F316L
N	A182Gr F321
O	A182 Gr F347
P	A350 Gr LF2
Q	A350 Gr LF3
R	Monel
S	Inconel
T	Titanium
U	Incoloy 825
Y	UNS N08904
K	Duplex 2205
J	254 SMO
J	254 SMO

TRIM MATERIAL	
A	13% CR
B	13% Cr St
H	A182-F304
D	A182-F304 St
L	A182-F316
F	A182-F316 St
N	A182-F321
R	Monel
S	Inconel
T	Titanium
U	Incoloy 825
Y	UNS N08904
J	UNS N08904
	St
X	Hastelloy C
M	A 182-F316L
C	Bronze
Q	Monel PTFE
E	Soft Seal
K	Duplex 2205
V	254 SMO

Ref.	Part. Name
32	REGULATING NEEDLE
21	RING IN TWO HALVES
20	DISC NUT
19	YOKE RETAINING NUT
18	BODY
17	DISC
16	SEAT
15	STEM
13	BONNET
10	PACKING
9	EYEBOLTS UNIT
8	PACKING GLAND
7	EYEBOLTS
6	GRAND FLANGE
5	NUT
4	YOKE NUT
3	NAME PLATE
2	BOLT
1	HANDWHEEL
3	NAME PLATE
2	BOLT
1	HANDWHEEL

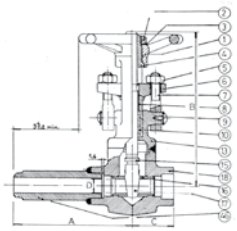
Note: For reference to items number add to the base drawing number a stroke then item no.
i.e WSC 803 RB/18 means body for Gate Valve WSC 800 RB. Size 15 mm.
• RATING FOR CARBON STEEL TO ANSI B 16.34 EDITION 1977
STANDARD API 602 & BS 5352

Forged Gate Valves
Carbon, Alloy, Stainless Steel and Special Materials
Screwed, Beveled End for Welding, Socket Weld Ends
Reinforced Extension

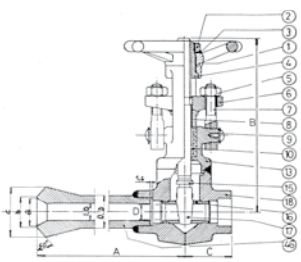
CLASS	ND mm.	OUR TYPE	END TO END 'A' mm.	PORT DIAM. 'C' mm.
800 Lbs • 138 bar at -30 + 38° C	15 20 25 40	**WSC 6063** **WSC 6064** **WSC 6065** **WSC 6067**	142 161.5 182.5 214	11 12.7 19 30
800 Lbs • 138 bar at - 30 + 38° C	15 20 25 40	**WSC 6063 R** **WSC 6064 R** **WSC 6065 R** **WSC 6067 R**	207 218.5 243.5 263	11 12.7 19 30
800 Lbs • 255 bar at - 30 + 38° C	15 20 25 40	**WSC 15063** **WSC 15064** **WSC 15065** **WSC 15067**	156 180 198.5 236	11 12.7 19 30

BODY MATERIAL	
A	A 105
B	A182 GR F1
C	A182 GR F5
D	A182 Gr F9
E	182 Gr. F11
F	A182 Gr F12
G	A182 Gr F22
H	A182 Gr F304
I	A182 Gr F304L
L	A182 Gr F316
M	A182 Gr F316L
N	A182Gr F321
O	A182 Gr F347
P	A350 Gr LF2
Q	A350 Gr LF3
R	Monel
S	Inconel
T	Titanium
U	Incoloy 825
Y	UNS N08904
K	Duplex 2205
J	254 SMO

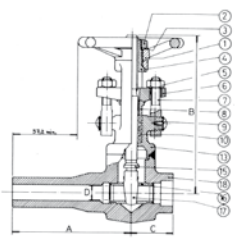
TRIM MATERIAL	
A	13% CR
B	13% Cr St
H	A182-F304
D	A182-F304 St
L	A182-F316
F	A182-F316 St
N	A182-F321
P	A182-F321 St
R	Monel
S	Inconel
T	Titanium
U	Incoloy 825
Y	UNS N08904
J	UNS N08904 St
X	Hastelloy C
M	A 182-F316L
C	Bronze
Q	Monel PTFE
E	Soft Seal
K	Duplex 2205
V	254 SMO



Gate Valves
Type WSC 1506



Gate Valves
Reinforced
type WSC 606 R



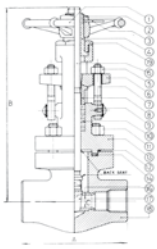
Gate Valves
type WSC 606 I

Ref.	Part. Name
46	BODY EXTENSION
18	BODY
17	DISC
16	SEAT
15	STEM
13	BONNET
10	PACKING
9	EYEBOLTS UNIT
8	PACKING GLAND
7	EYEBOLTS
6	GLAND FLANGE
5	NUT
4	YOKE NUT
3	NAME PLATE
2	BOLT
1	HANDWHEEL

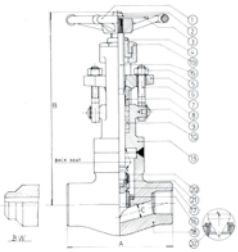
Note: For reference to items number add to the base drawing number a stroke then item no.
i.e WSC 6063/18 means body for Gate Valves Extended Body API 606. Size 15 mm.
• RATING FOR CARBON STEEL TO ANSI B 16.34 EDITION 1977
STANDARD API 602 & BS 5352

Bolted or Welded Bonnet O.S. & Y.
Class 1500 lbs

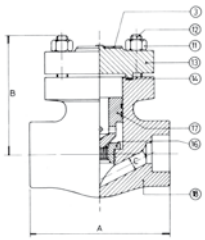
Forged Gate, Globe, Check Valves
Carbon, Alloy, Stainless Steel and Special Materials
Screwed or Socket Weld Ends
Full Penetration Welded Bonnet



Gate Valves
type BSC 1500
or Globe Valves
type BBD 01500



Globe Valves
type WBD 01500
* Button head up to
ND 20 size
Gate Valves
type WSC 1500



Piston Check Valves
type CKP 1500
or Swing Check Valves
type CKS 1500
or Ball Check Valves
type CKB 1500

CLASS	ND mm.	OUR TYPE	END TO END 'A' mm.	PORT DIAM. 'C' mm.
1500 Lbs BB-O.S.&Y. • 255 bar at - 30 + 38° C	15 20 25 40 50	**BSC 1503** **BSC 1504** **BSC 1505** **BSC 1507** **BSC 1508**	92 114.3 127 171.4 228.6	11 13. 5 19 30 38
1500 Lbs BB-O.S.&Y. • 255 bar at - 30 + 38° C	15 20 25 40 50	**BBD 01503** **BBD 01504** **BBD 01505** **BBD 01507** **BBD 01508**	92 114.3 127 171.4 228.6	12 14. 3 19 28 40
1500 Lbs WB-O.S.&Y. • 255 bar at - 30 + 38° C	15 20 25 40 50	**WSC 01503** **WSC 01504** **WSC 01505** **WSC 01507** **WSC 01508**	89 105 127 171,4 184	11 13. 5 19 30 38
1500 Lbs WB-O.S.&Y. • 255 bar at -30 + 38° C	15 20 25 40 50	**WBD 01503** **WBD 01504** **WBS 01505** **WBD 01507** **WBD 01508**	89 105 127 171.4 184	12 14. 3 19 28 40
1500 Lbs BB-O.S.&Y. • 255 bar at -30 + 38°C	15 20 25 40 50	**CKP 1503** **CKP 1504** **CKP 1505** **CKP 1507** **CKP 1508**	92 114 127 172 229	12 17. 5 22 32 44.4
1500 Lbs BB-O.S.&Y. • 138 bar at - 30 + 38° C	15 20 25 40 50	**CKS 1503** **CKS 1504** **CKS 1505** **CKS 1507** **CKS 1508**	92 114 127 172 229	12 17. 5 22 32 44.4
1500 Lbs BB-O.S.&Y. • 138 bar at - 30 + 38° C	15 20 25 40 50	**CKS 1503** **CKS 1504** **CKS 1505** **CKS 1507** **CKS 1508**	92 114 127 172 229	12 17. 5 22 32 44.4

BODY MATERIAL	
A	A105
B	A182 GR F1
C	A182 GR F5
D	A182 Gr F9
E	A182 Gr. F11
F	A182 Gr F12
G	A182 Gr F22
H	A182 Gr F304
I	A182 Gr F304L
L	A182 Gr F316
M	A182 Gr F316L
N	A182 Gr F321
O	A182 Gr F347
P	A350 Gr LF2
Q	A350 Gr LF3
R	Monel
S	Inconel
T	Titanium
U	Incoloy 825
Y	UNS N08904
K	Duplex 2205
J	254 SMO

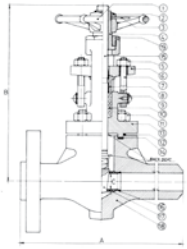
TRIM MATERIAL	
A	13% CR
B	13% Cr St
H	A182-F304
D	A182-F304 St
L	A182-F316
F	A182-F316 St
N	A182-F321
P	A182-F321 St
R	Monel
S	Inconel
T	Titanium
U	Incoloy 825
Y	UNS N08904
J	UNS N08904 St
X	Hastelloy C
M	A 182-F316L
C	Bronze
Q	Monel PTFE
E	Soft Seal
K	Duplex 2205
V	254 SMO

St = Stellite

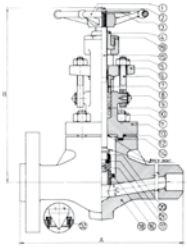
Ref.	Part. Name
32	REGULATING NEEDLE
21	RING IN TWO HALVES
20	DISC NUT
19	YOKE RETAINING NUT
18	BODY
17	DISC
16	SEAT
15	STEM
13	BONNET
10	PACKING
9	EYEBOLTS UNIT
8	PACKING GLAND
7	EYEBOLTS
6	GRAND FLANGE
5	NUT
4	YOKE NUT
3	NAME PLATE
2	BOLT
1	HANDWHEEL
3	NAME PLATE
2	BOLT
1	HANDWHEEL

Note: For reference to items number add to the base drawing number a stroke then item no.
i.e BSC 1503/18 means body for Gate Valve screwed or socket weld ends. Size 15 mm.
• RATING FOR CARBON STEEL TO ANSI B 16.34 EDITION 1977
BRITISH STANDARD 5352

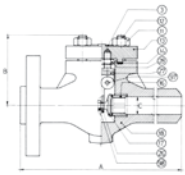
Forged Gate, Globe and Check Valves
Bolted Bonnet, O.S. & Y.
Carbon, Alloy, Stainless Steel and Special Materials
Flanges Integrally Forged with Body Class 150 - 300 - 600 lbs



Gate Valves
type SCF 600
or SCF 300
or SCF 150



Globe & Needle Valves
type DF 0600
or DF 0300
or DF 0150
* Button head up to
ND 25 size



Swing Check Valves
type CKBF 0600
or CKBF 300

CLASS	ND mm.	OUR TYPE	END TO END 'A' mm.	PORT DIAM. 'C' mm.
150 Lbs • 19.5 bar at -30 + 38° C	15 20 25 40 50	**SCF 153** **SCF 154** **SCF 155** **SCF 157** **SCF 158**	108 118 127 165 178	11 12.7 19 30 38
300 Lbs • 51 bar at -30 + 38° C	15 25 40 50	**SCF 303** **SCF 305** **SCF 307** **SCF 308**	140 165 190.5 216	12.7 24 38 50
600 Lbs • 102 bar at -30 + 38° C	15 20 25 40 50	**SCF 603** **SCF 604** **SCF 605** **SCF 607** **SCF 608**	165 190.5 216 241 292	12.7 19 24 38 50
150 Lbs • 19.5 bar at - 30 + 38° C	15 20 25 40 50	**DF 0153** **DF 0154** **DF 0155** **DF 0157** **DF 0158**	108 117.5 127 165 203	7 12 17.7 29 32
300 Lbs • 51 bar at -30 + 38° C	15 20 25 40 50	**DF 0303** **DF 0304** **DF 0305** **DF 0307** **DF 0308**	152.4 177.8 203.2 228.6 266.7	12 17.5 22 29 40
600 Lbs • 102 bar at -30 + 38° C	15 20 25 40 50	**DF 0603** **DF 0604** **DF 0605** **DF 0607** **DF 0608**	165 190.5 216 241 292	12 17.5 22 29 40
300 Lbs • 51 bar at - 30 + 38° C	15 20 25 40 50	**CKBF 303** **CKBF 304** **CKBF 305** **CKBF 307** **CKBF 308**	165 190.5 216 241 266.7	12 17.5 22 32 44.4
600 Lbs • 102 bar at - 30 + 38° C	15 20 25 40 50	**CKBF 603** **CKBF 604** **CKBF 605** **CKBF 607** **CKBF 608**	165.1 190.5 216 241 292	12 17.5 22 32 44.4

BODY MATERIAL	
A	A105
B	A182 GR F1
C	A182 GR F5
D	A182 Gr F9
E	A182 Gr. F11
F	A182 Gr F12
G	A182 Gr F22
H	A182 Gr F304
I	A182 Gr F304L
L	A182 Gr F316
M	A182 Gr F316L
N	A182 Gr F321
O	A182 Gr F347
P	A350 Gr LF2
Q	A350 Gr LF3
R	Monel
S	Inconel
T	Titanium
U	Incoloy 825
Y	UNS N08904
J	254 SMO

TRIM MATERIAL	
A	13% CR
B	13% Cr St
H	A182-F304
D	A182-F304 St
L	A182-F316
F	A182-F316 St
N	A182-F321
P	A182-F321 St
R	Monel
S	Inconel
T	Titanium
U	Incoloy 825
Y	UNS N08904
J	UNS N08904 St
X	Hastelloy C
M	A 182-F316L
C	Bronze
Q	Monel PTFE
E	Soft Seal
K	Duplex 2205
V	254 SMO

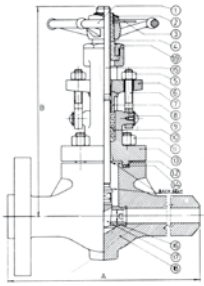
St = Stellite

Ref.	Part. Name
32	REGULATING NEEDLE
21	RING IN TWO HALVES
20	DISC NUT
19	YOKE RETAINING NUT
18	BODY
17	DISC
16	SEAT
15	STEM
14	GASKET
13	BONNET
12	STUD BOLTS
11	NUT
10	PACKING
9	EYEBOLTS UNIT
8	PACKING GLAND
7	EYEBOLTS
6	GRAND FLANGE
5	NUT
4	YOKE NUT
3	NAME PLATE
2	BOLT
1	HANDWHEEL

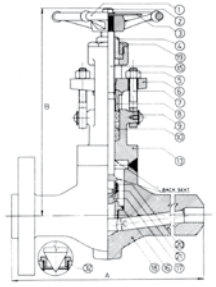
Note: For reference to items number add to the base drawing number a stroke then item no.
i.e SCF 153/18 means body for Gate Valves flanged ANSI 150. Size 15 mm.
• RATING FOR CARBON STEEL TO ANSI B 16.34 EDITION 1977
STANDARD API 602 & BS 5352

Flanged or Butt Weld Ends - O.S. & Y. -
Class 1500 lbs

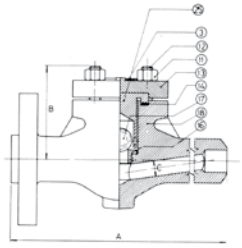
Forged Steel Gate, Globe, Check Valves
Carbon, Alloy, Stainless Steel and Special Materials
Flanges integrally forged with body
Bolted Bonnet or full penetration Welded Bonnet



Gate Valves
type SCF 1500
or WSCF 1500



Globe Valves
type WDF 01500
or DF 01500
* Button head up to
ND 20 size



Ball Check Valves
type CKSF 1500
or Piston Check Valves
type CKPF 1500
or Swing Check Valves
type CKBF 1500

CLASS	ND mm.	OUR TYPE	END TO END 'A' mm.	PORT DIAM. 'C' mm.
1500 Lbs • 255 bar at -30 + 38° C	15 20 25 40	**SCF 1503** **SCF 1504** **SCF 1505** **SCF 1507**	216 228.6 254 305	12.7 19 24 38
1500 Lbs • 255 bar at - 30 + 38° C	15 20 25 40	**WSCF 1503** **WSCF 1504** **WSCF 1505** **WSCF 1507**	216 228.6 254 305	12.7 19 24 38
1500 Lbs • 255 bar at - 30 + 38° C	15 20 25 40	**DF 01503** **DF 01504** **DF 01505** **DF 01507**	216 228.6 254 305	12 17.5 22 29
1500 Lbs • 255 bar at -30 + 38° C	15 20 25 40	**WDF 01503** **WDF 01504** **WDF 01505** **WDF 01507**	216 228.6 254 305	12 17.5 22 29
1500 Lbs • 255 bar at -30 + 38°C	15 20 25 40	**CKPF 1503** **CKPF 1504** **CKPF 1505** **CKPF 1507**	216 229 254 305	12 17.5 22 29
1500 Lbs • 255 bar at - 30 + 38° C	15 20 25 40	**CKSF 1503** **CKSF 1504** **CKSF 1505** **CKSF 1507**	216 229 254 305	12 17.5 22 29
1500 Lbs • 255 bar at - 30 + 38° C	15 20 25 40	**CKBF 1503** **CKBF 1504** **CKBF 1505** **CKBF 1507**	216 228.6 254 305	12 17.5 22 32

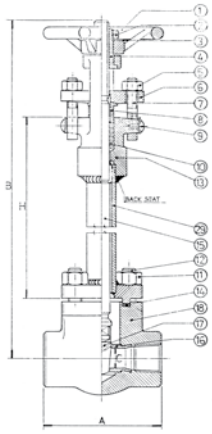
BODY MATERIAL

A	A105
B	A182 GR F1
C	A182 GR F5
D	A182 Gr F9
E	A182 Gr. F11
F	A182 Gr F12
G	A182 Gr F22
H	A182 Gr F304
I	A182 Gr F304L
L	A182 Gr F316
M	A182 Gr F316L
N	A182 Gr F321
O	A182 Gr F347
P	A350 Gr LF2
Q	A350 Gr LF3
R	Monel
S	Inconel
T	Titanium
U	Incoloy 825
Y	UNS N08904
K	Duplex 2205
J	254 SMO

Ref.	Part. Name
32	REGULATING NEEDLE
21	RING IN TWO HALVES
20	DISC NUT
19	YOKE RETAINING NUT
18	BODY
17	DISC
16	SEAT
15	STEM
13	BONNET
10	PACKING
9	EYEBOLTS UNIT
8	PACKING GLAND
7	EYEBOLTS
6	GRAND FLANGE
5	NUT
4	YOKE NUT
2	BOLT
1	HANDWHEEL
1	HANDWHEEL
3	NAME PLATE
2	BOLT
1	HANDWHEEL

Note: For reference to item numbers add to the base drawing number a stroke then item no.
i.e SCF 1503/18 means body for Gate Valve flanged RF. Size 15 mm.
• RATING FOR CARBON STEEL TO ANSI B 16.34 EDITION 1977
BRITISH STANDARD BS 5352

Forged Gate and Globe Valves
in Stainless Steel
Screwed or Socked Weld Ends



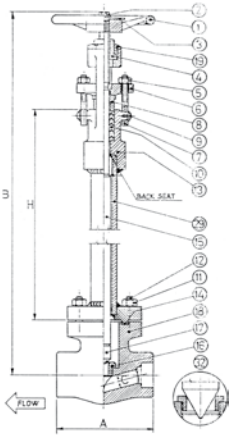
Cryogenic Gate Valves
type BSC 800 BT
or Globe Valves
tpe BBD 0800 BT

CLASS	ND mm.	OUR TYPE	END TO END 'A' mm.	PORT DIAM. 'C' mm.
800 Lbs 99 bar at cold non shock - 196° C	15 20 25 40 50	**BSC 803 BT** **BSC 804 BT** **BSC 805 BT** **BSC 807 BT** **BSC 808 BT**	89 105 127 172 184	12.7 19 24 38 50
800 Lbs 99 bar at cold non shock - 196° C	15 20 25 40 50	**BBD 0803 BT** **BBD 0804 BT** **BBD 0805 BT** **BBD 0807 BT** **BBD 0808 BT**	89 105 127 172 184	12 17.5 22 29 40
1500 Lbs 248 bar at - 196° C	15 20 25 40 50	**BSC 1503 BT** **BSC 1504 BT** **BSC 1505 BT** **BSC 1507 BT** **BSC 1508 BT**	92 114 127 172 228.6	12.7 19 24 38 50
1500 Lbs 248 bar at - 196° C	15 20 25 40 50	**BBD 01503 BT** **BBD 01504 BT** **BBD 01505 BT** **BBD 01507 BT** **BBD 01508 BT**	92 114 127 172 228.6	12 17.5 22 29 40

BODY MATERIAL	
H	A182 GR. F304
I	A182 GR F304L
L	A182 GR F316
M	A182 Gr F316L
N	A182 Gr F321
O	A182 Gr F347
R	Monel
S	Inconel
T	Titanium
U	Incoloy 825
K	Duplex 2205

TRIM MATERIAL	
H	A182-F304
D	A182-F304 St
L	A182-F316
F	A182-F316 St
N	A182-F321
P	A182-F321 St
R	Monel
S	Inconel
T	Titanium
U	Incoloy 825
X	Hastelloy C
M	A182-F316L
C	Bronze
Q	Monel PTFE
E	Soft Seal

St = Stellite



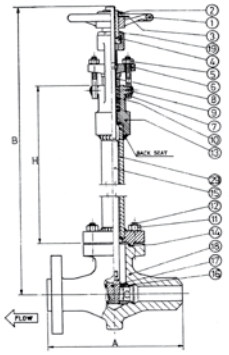
Cryogenic Globe Valves
type BBD 01500 BT
or Gate Valves
type BSC 1500 BT
* Button head up to
ND 25 size

Ref.	Part. Name
32	REGULATING NEEDLE
29	EXTENSION PIPE
19	YOKE RETAINING NUT
18	BODY
17	DISC
16	SEAT
15	STEM
14	GASKET
13	BONNET
12	STUD BOLTS
11	NUT
10	PACKING
9	EYEBOLTS UNIT
8	PACKING GLAND
7	EYEBOLTS
6	GRAND FLANGE
5	NUT
4	YOKE NUT
3	NAME PLATE
2	BOLT
1	HANDWHEEL

Note: For reference to items number add to the base drawing number a stroke then item no.
i.e BSC 803 BT/18 means body for Gate Valve 800 Lbs. Size 15 mm.
British standard 5352

For Cryogenic Service - Extended Bolted Bonnet Flanged or Butt Weld Ends - O.S. & Y.
Class 300 and 600 lbs

Forged Gate and Globe Valves
in Stainless Steel
Flanges integrally forged with body



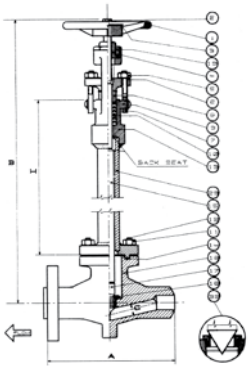
Cryogenic Gate Valves
type SCF 300 BT
or SCF 600 BT

CLASS	ND mm.	OUR TYPE	END TO END 'A' mm.	PORT DIAM. 'C' mm.
300 Lbs 49.6 bar at - 196° C	15 20 25 40 50	**SCF 303 BT** **SCF 304 BT** **SCF 305 BT** **SCF 307 BT** **SCF 308 BT**	140 152.4 165 191 216	12.7 19 24 38 50
600 Lbs 99 bar at - 196° C	15 20 25 40 50	**SCF 603 BT** **SCF 604 BT** **SCF 605 BT** **SCF 607 BT** **SCF 608 BT**	165 190.5 216 241 292	12.7 19 24 38 50
300 Lbs 49 bar at - 196° C	15 20 25 40 50	**DF 0303 BT** **DF 0304 BT** **DF 0305 BT** **DF 0307 BT** **DF 0308 BT**	152 178 203 229 267	12 17.5 22 29 40
600 Lbs 99 bar at - 196° C	15 20 25 40 50	**DF 0603 BT** **DF 0604 BT** **DF 0605 BT** **DF 0607 BT** **DF 0608 BT**	165 190.5 216 241 292	12 17.5 22 29 40

BODY MATERIAL	
H	A182 GR. F304
I	A182 GR F304L
L	A182 GR F316
M	A182 Gr F316L
N	A182 Gr F321
O	A182 Gr F347
R	Monel
S	Inconel
T	Titanium
U	Incoloy 825
K	Duplex 2205

TRIM MATERIAL	
H	A182-F304
D	A182-F304 St
L	A182-F316
F	A182-F316 St
N	A182-F321
P	A182-F321 St
R	Monel
S	Inconel
T	Titanium
U	Incoloy 825
X	Hastelloy C
M	A182-F316L
C	Bronze
Q	Monel PTFE
E	Soft Seal

St = Stellite



Cryogenic Globe Valves
type DF 0300 BT
or DF 0600 BT
* Button head up to
ND 25 size

Ref.	Part. Name
32	REGULATING NEEDLE
29	EXTENSION PIPE
19	YOKE RETAINING NUT
18	BODY
17	DISC
16	SEAT
15	STEM
14	GASKET
13	BONNET
12	STUD BOLTS
11	NUT
10	PACKING
9	EYEBOLTS UNIT
8	PACKING GLAND
7	EYEBOLTS
6	GRAND FLANGE
5	NUT
4	YOKE NUT
3	NAME PLATE
2	BOLT
1	HANDWHEEL

Note: For reference to items number add to the base drawing number a stroke then item no.
i.e SCF 603 BT/18 means body for Gate Valve 600 Lbs. Size 15 mm.
British standard 5352

Other grades available on request.

Standard	Grade Designation	Colour Code	Heat Treatment	Yield Strength psi N/mm2 min	Yield Strength psi N/mm2 max	Tensile Strength psi N/mm2 min
5CT Group 1 Tubing & Casing • API-connnection • Optiflow • Multiseal • Techniseal	Grade J55 *	Green	Grade J Tubing & Casing + Grade K Casing are normalized if so specified on the purchase order Grade N Tubing & Casing is heat treated, full length after upsetting	55000 380	80000 550	75000 520
	Grade K55 *	Green/Green		55000 380	80000 550	95000 655
	Grade N80 *	Red		80000 550	110000 760	100000 690
5 CT Group 2 Tubing & Casing • API-connnection • Optiflow • Multiseal • Techniseal	Grade C75 Type 1	Blue	Normalized and Tempered	75000 515	90000 620	95000 655
	Grade C75 Type 2	Blue	Quenched and Tempered			
	Grade C75 Tyoe 3	Blue	Normalized and Tempered			
	Grade C75 9 Cr	Blue/Yellow Yellow	Quenched and Tempered	75000 515	90000 620	95000 655
	Grade C75 13 Cr	Blue/Yellow	Quenched and Tempered			
	Grade L 80 Type 1	Red/Brown Red	Quenched and Tempered	80000 550	95000 655	95000 655
	Grade L80SS	Red/Brown Red	Quenched and Tempered			
	Grade L80 9 Cr *	Red/Brown/ Yellow/Yellow	Quenched and Tempered	80000 550	95000 655	95000 655
	Grade L80 13 Cr *	Red/Brown/ Yellow	Quenched and Tempered			
	Grade C90 Type 1 *	Purple	Quenched and Tempered	90000 620	105000 725	100000 690
	Grade C90 Type 2 *	Purple	Quenched and Tempered			
	Grade C95 *	Brown	Quenched and Tempered	95000 655	110000 760	105000 725
	Grade C95SS	Brown	Quenched and Tempered			
	Grade C95 9 Cr	Brown/Yellow	Quenched and Tempered	95000 655	110000 760	115000 725
	Grade C95 13 Cr	Brown/Yellow	Quenched and Tempered			
	Grade T95 Type 1 *	Silver	Quenched and Tempered	95000 655	110000 760	105000 725
	Grade T95 Type 2 *	Silver	Quenched and Tempered			
5 CT Group 3 Tubing & Casing • API-connnection • Optiflow • Multiseal • Techniseal	Grade P105	White	Quenched and Tempered	10500 725	135000 930	120000 830
	Grade P110 *	White	Quenched and Tempered	110000 760	140000 965	125000 860
TPS Tubing & Casing	TPS Techniduplex TD 2205	-	Solution Annealed: if required cold reworked	as per agreemenet up to 110 KSI		as per agreement

	Hardness HRC BHN max.	Characteristics and Recommendation	Chemical Analysis						
			C	Si max.	Mn	P max.	S max.	Cr	Others
	–	Tubing & Casing for general service	–	–	–	0,030	0,030	–	–
	–	Casing for general service	–	–	–	0,030	0,030	–	–
	–	Tubing & Casing for general service	–	–	–	0,030	0,030	–	–
	–	Tubing & Casing with controlled yield range for sour well service	0,50 max.	0,45	1,90 max.	0,030	0,030		Mo 0,15 - 0,40 Cr + Ni + Cu max. 0,50
			0,43 max.	0,45	1,50 max.	0,030	0,030	–	–
			0,38-0,48	–	0,75 - 1,00	0,030	0,030	0,80 - 1,10	–
	22 237	Tubing & Casing for oil & gas wells affected by CO2 corrosion	0,15 max	1,00	0,30 - 0,60	0,020	0,010	8,00 - 10.00	Mo 0,90 - 1,10 Ni max. 0,50 Cu max. 0,25
			0,15 - 0,22	1,00	0,25 - 1,00	0,020	0,010	12,00 - 14,00	Ni max. 0,50 Cu max. 0,25
	23 241	Tubing & Casing with controlled yield range for sour well service	0,43 max	0,45	1,90 max.	0,030	0,030	–	Ni max. 0,25 Cu max. 0,35
		Tubing & Casing with controlled yield range for special sour well service	0,15 - 0,35	0,35	1,20 max.	0,020	0,010	0,80 - 1,60	Mo max. 1,10 Ni max. 0,20
	23 241	Tubing & Casing for oil & gas wells affected by CO2 corrosion	0,15 max	1,00	0,30 - 0,60	0,020	0,010	8,00 - 10,00	Mo 0,90 - 1,10 Ni max. 0,50 Cu max. 0,25
			0,15 - 0,22	1,00	0,25- 1,00	0,020	0,010	12,00 - 14,00	Ni max. 0,50 Cu max. 0,25
	25,4 255	Hight strength Tubing & Casing with controlled yield range service in hydrogen sulphide environments	0,35 max.	–	1,00 max.	0,020	0,010	1,20 max.	Mo max. 0,75 Ni max. 0,99
			0,50 max.	–	1,90 max.	0,030	0,010	–	Ni max. 0,99
	–	High strength Tubing & Casing with controlled yield range	0,45 max	0,45	1,90 max.	0,030	0,030	–	
	25,4 255	High strength Tubing & Casing with controlled yield range for special sour well service	0,15 - 0,35	0,35	1,20 max.	0,020	0,010	0,80 - 1,60	Mo max. 1,10 Ni max. 0,20
	–	Hight strength Tubing & Casing for oil & gas wells affected by CO2 corrosion	0,15 max.	1,00	0,30 - 0,60	0,020	0,010	8,00 - 10,00	Ni max. 0,50 Cu max.0,25
			0,15 - 0,22	1,00	0,25 - 1,00	0,020	0,010	12,00 - 14,00	Mo 0,25 - 0,85 Ni max. 0,99
	25,4 255	Hight strength Tubing & Casing with controlled yield range for service in hydrogen sulphide environments	0,35 max.	–	1,20 max.	0,020	0,010	0,40 - 1,50	Mo 0,25 - 0,85 Ni max. 0,99
			0,50 max.	–	1,90 max.	0,030	0,100	–	Ni max. 0,99
	–	High strength Tubing & Casing for high pressure service	–	–	–	0,030	0,030	–	–
	–	High strength Tubing & Casing for high pressure service	–	–	–	0,030	0,030	–	–
	as per agree-ment	Tubing & Casing for Duplex application	0,03 max.	1,00	2,00 max.	0,030	0,020	21,00 - 23,00	Mo 2,50 - 3,50 Ni 4,50 - 6,50 N 0,08 - 0,20

* Grades as per API Spec. 5CT

- Tubing and Casing Size
API-Standard (NU, EU, Integral Joint, CSG, LCSG, BCSG, Extreme Line)
TPS-OPTIFLOW® (High Perfromance Coupling Connection)
TPS-TECHNISEAL® (Premium Coupling Connection with Metal-to-Metal Seal)
TPS-MULTISEAL®-TS 4/6/8 (Premium Integral Connection with multiple Metal-to-Metal Seals)
TPS-MULTISEAL® Flush Joint (Premium Integral Non Upset Connection with multiple Metal-to-Metal Seals)

	API-Stamdard						TPS-OPTIFLOW®			TPS-PREMIUM GASTIGHT							
	Threaded & Coupled NU Tubing	Threaded & Coupled -eu -Tubing	Integral Joint Tubing	Threaded & Coupled Round Thread Casing	Threaded & Coupled Buttress Thread Casing	Threaded & Coupled Extreme-Line Casing	Threaded & Coupled NU Tubing	Threaded & Coupled -eu Tubing	Threaded & Copled Buttress Thread Casing	Threaded & Coupled TPS TECHNISEAL	Integral Joint TPS MULTISEAL TS8	Integral Joint TPS MULTISEAL TS6	Inetgral Joint TPS-MULTISEAL TS4	Integral Joint TPS MULTISEAL TS 8 TR	Integral Joint TPS MULTISEAL TS 6 TR	Integral Joint TPS MULISEAL TS 4 TR	Integral Joint TPS MULTISEAL Flush Joint
Size inch mm																	
1.050 26,67	✘										✘						
1.315 33,40	✘	✘	✘								✘						
1.660 42,16	✘	✘	✘								✘						
1.900 48,26	✘	✘	✘				✘	✘			✘			✘			
2.063 52,40			✘								✘			✘			
2 3/8 60,33	✘	✘					✘	✘		✘	✘	✘		✘	✘		✘
2 7/8 73,03	✘	✘					✘	✘		✘	✘	✘		✘	✘		✘
3 1/2 88,90	✘	✘					✘	✘		✘	✘	✘		✘	✘		✘
4 101,60	✘	✘					✘	✘		✘	✘	✘		✘	✘		✘
4 1/2 114,30	✘	✘		✘	✘		✘	✘	✘	✘	✘	✘		✘	✘		✘
5 127,00				✘	✘	✘			✘	✘		✘	✘			✘	✘
5 1/2 139,70				✘	✘	✘			✘	✘			✘			✘	✘
6 5/8 168,28				✘	✘	✘			✘	✘			✘			✘	✘
7 177,80				✘	✘	✘			✘	✘			✘			✘	✘
7 5/8 193,68				✘	✘	✘			✘	✘							✘
8 5/8 219,08				✘	✘	✘			✘	✘							✘
9 5/8 244,48				✘	✘	✘			✘	✘							
10 3/4 273,05				✘	✘	✘			✘	✘							
11 3/4 298,45				✘	✘				✘								
13 3/8 339,73				✘	✘				✘	✘							

For Special-Connectors and for Thread Service please ask us for your nearest TPS Licensce. For general information only.

Drain Pipes PVC hard, DIN 8062, series 3

Nom. Diameter (inch)	Outside Diameter (mm)	Wall Thickness (mm)	Pipe Weight (kg/m)	Internal Volume (l/m)	Water filled Pipe (kg/m)
40	50	1.8	0.40	1.69	2.09
50	63	1.9	0.53	2.75	3.29
70	75	2.2	0.73	3.91	4.65
80	90	2.7	1.08	5.62	6.70
100	110	3.2	1.57	8.43	10.00
125	125	3.7	2.06	10.86	12.92
150	160	4.7	3.35	17.81	21.16
-	180	5.3	4.25	22.54	26.78
-	200	5.9	5.25	27.82	33.07
.	225	6.6	6.61	35.23	41.84
-	250	7.3	8.13	43.52	51.65
-	280	8.2	10.22	54.57	64.80
-	315	9.2	12,90	69.09	82.00

Pressure Pipes PN16 PVC hard, DIN 8062, series 5

Nom. Diameter (inch)	Outside Diameter (mm)	Wall Thickness (mm)	Pipe Weight (kg/m)	Internal Volume (l/m)	Water filled Pipe (kg/m)
10	16	1.2	0.08	0.15	0.23
15	20	1.5	0.13	0.23	0.35
20	25	1.9	0.20	0.35	0.55
25	32	2.4	0.33	0.58	0.91
32	40	3.0	0.51	0.91	1.42
40	50	3.7	0.79	1.43	2.21
50	63	4.7	1.26	2.26	3.51
65	75	5.6	1.78	3.20	4.98
80	90	6.7	2.56	4.61	7.17
100	110	8.2	3.83	6.88	10.71
125	140	10.4	6.18	11.16	17.34
150	160	11.9	8.08	14.57	22.65
-	180	13.4	10.24	18.43	28.67
-	200	14.9	12.65	22.75	35.40
-	225	16.7	15.96	28.83	44.79
-	250	18.6	19.74	35.57	55.31
-	280	20.8	24.73	44.64	69.37
-	315	23.4	31.30	56.49	87.79

PE Drain Pipes, DIN 19535

Nom. Diameter (inch)	Outside Diameter (mm)	Wall Thickness (mm)	Pipe Weight (kg/m)	Internal Volume (l/m)	Water filled Pipe (kg/m)
-	32	3.0	0.27	0.53	0.80
-	40	3.0	0.35	0.91	1.26
40	50	3.0	0.44	1.52	1.96
50	56	3.0	0.50	1.96	2.46
-	63	3.0	0.57	2.55	3.12
70	75	3.0	0.68	3.74	4.42
80	90	3.5	0.95	5.41	6.36
100	110	4.3	1.43	8.08	9.50
125	125	4.9	1.85	10.42	12.27
150	160	6.2	3.00	17.11	20.11
200	200	6.2	3.77	27.64	31.42
250	250	7.8	5.93	43.15	49.09
300	315	9.8	9.40	68.53	77.93

Drain Pipes SML DIN 19522

Nom. Diameter (inch)	Outside Diameter (mm)	Wall Thickness (mm)	Pipe Weight (kg/m)	Internal Volume (l/m)	Water filled Pipe (kg/m)
40	48	3.0	3.07	1.39	4.46
50	58	3.5	4.34	2.04	6.39
70	78	3.5	5.94	3.96	9.90
80	83	3.5	6.34	4.54	10.87
100	110	3.5	8.49	8.33	16.82
125	135	4.0	11.93	12.67	24.60
150	160	4.0	14.21	18.15	32.36
200	210	5.0	23.35	31.42	54.76
250	274	5.5	33.64	54.33	87.96
300	326	6.0	43.73	77.44	121.17
400	429	8.1	77.65	133.83	211.49
500	532	9.0	107.21	207.50	314.71
600	635	9.9	140.95	297.25	438.20

Drain Pipes GA, DIN 19500

Nom. Diameter (inch)	Outside Diameter (mm)	Wall Thickness (mm)	Pipe Weight (kg/m)	Internal Volume (l/m)	Water filled Pipe (kg/m)
50	60	3.5	5.19	2.21	7.39
70	80	3.5	7.02	4.19	11.24
100	112	4.0	11.33	8.49	19.83
125	137	4.0	13.96	13.07	27.03
150	162	5.0	20.59	18.15	38.74
200	212	6.0	32.42	31.42	63.84

HDE Pipes, DIN 8074

OD (mm)	Series 1		Series 2		Series 3		Series 4		Series 5	
	S (mm)	Weight (kg/m	S (mm)	Weight (kg/m	S (mm)	Weight (kg/m	S (mm)	Weight (kg/m	S (mm)	Weight (kg/m
10	-	-	-	-	-	-	-	-	2.0	0.05
12	-	-	-	-	-	-	-	-	2.0	0.06
16	-	-	-	-	-	-	-	-	2.0	0.08
20	-	-	-	-	-	-	-	-	2.0	0.11
25	-	-	-	-	-	-	2.0	0.14	2.3	0.16
32	-	-	-	-	-	-	2.0	0.18	3.0	0.26
40	-	-	-	-	2.0	0.23	2.3	0.26	3.7	0.40
50	-	-	-	-	2.0	0.29	2.9	0.41	4.6	0.62
63	-	-	2.0	0.36	2.5	0.45	3.6	0.64	5.8	0.99
75	2.0	0.44	2.4	0.52	2.9	0.62	4.3	0.91	6.9	1.40
90	2.2	0.58	2.8	0.73	3.5	0.90	5.1	1.29	8.2	2.00
110	2.7	0.86	3.5	1.11	4.3	1.36	6.3	1.95	10.0	2.98
125	3.1	1.13	3.9	1.41	4.9	1.76	7.1	2.50	11.4	3.87
140	3.5	1.43	4.4	1.78	5.4	2.17	8.0	3.15	12.8	4.86
160	3.9	1.82	5.0	2.31	6.2	2.85	9.1	4.10	14.6	6.34
180	4.4	2.31	5.6	2.91	7.0	3.61	10.2	5.17	16.4	8.01
200	4.9	2.85	6.2	3.59	7.7	4.42	11.4	6.42	18.2	9.88
225	5.5	3.60	7.0	4.55	8.7	5.62	12.8	8.11	20.5	12.51
250	6.1	4.44	7.8	5.64	9.7	6.96	14.2	9.99	22.8	15.46
280	6.9	5.62	8.7	7.04	10.8	8.68	15.9	12.53	25.5	19.37
315	7.7	7.06	9.8	8.93	12.2	11.03	17.9	15.87	28.7	24.52
355	8.7	8.99	11.1	11.39	13.7	13.96	20.1	20.09	32.3	31.11
400	9.8	11.41	12.4	14.34	15.4	17.68	22.7	25.56	36.4	39.50
450	11.0	14.41	14.0	18.22	17.4	22.47	25.5	32.31	41.0	50.05
500	12.2	17.76	15.5	22.41	19.3	27.69	28.3	39.84	45.5	61.72
560	13.7	22.34	17.4	28.18	21.6	34.71	31.7	49.98	-	-
630	15.4	28.25	19.6	35.71	24.3	43.93	35.7	63.32	-	-
710	17.4	35.97	22.1	45.37	27.4	55.82	40.2	80.36	-	-
800	19.6	45.65	24.9	57.60	30.8	70.71	45.3	102.03	-	-
900	22.0	57.65	28.0	72.87	34.7	89.61	-	-	-	-
1000	24.4	71.05	31.0	89.65	38.5	110.48	-	-	-	-

PP Pipes, DIN 8078

OD (mm)	Series 1		Series 2		Series 3		Series 4		Series 5	
	S (mm)	Weight (kg/m	S (mm)	Weight (kg/m	S (mm)	Weight (kg/m	S (mm)	Weight (kg/m	S (mm)	Weight (kg/m
10	-	-	-	-	-	-	2.0	0.05		
12	-	-	-	-	-	-	2.0	0.06		
16	-	-	-	-	-	-	2.0	0.08		
20	-	-	-	-	1.8	0.10	2.5	0.13		
25	-	-	-	-	1.8	0.12	2.7	0.18		
32	-	-	-	-	2.0	0.18	3.0	0.25		
40	-	-	1.8	0.20	2.3	0.25	3.7	0.39		
50	1.8	0.25	2.0	0.28	2.9	0.40	4.6	0.61		
63	1.8	0.32	2.5	0.44	3.6	0.62	5.8	0.97		
75	1.9	0.41	2.9	0.61	4.3	0.89	6.9	1.37		
90	2.2	0.56	3.5	0.88	5.1	1.27	8.2	1.96		
110	2.7	0.85	4.3	1.33	6.3	1.91	10.0	2.92		
125	3.1	1.10	4.9	1.72	7.1	2.45	11.4	3.78		
140	3.5	1.40	5.4	2.12	8.0	3.09	12.8	4.76		
160	3.9	1.78	6.2	2.79	9.1	4.01	14.6	6.20		
180	4.4	2.26	7.0	3.54	10.2	5.06	16.4	7.84		
200	4.9	2.79	7.7	4.33	11.4	6.28	18.2	9.67		
225	5.5	3.53	8.7	5.50	12.8	7.94	20.5	12.25		
250	6.1	4.35	9.7	6.81	14.2	9.78	22.8	15.13		
280	6.9	5.51	10.8	8.49	15.9	12.27	25.5	18.96		
315	7.7	6.91	12.2	10.79	17.9	15.54	28.7	24.01		
355	8.7	8.80	13.7	13.66	20.1	19.67	32.3	30.45		
400	9.8	11.17	15.4	17.30	22.7	25.02	36.4	38.67		
450	11.0	14.11	17.4	21.99	25.5	31.63	41.0	48.99		
500	12.2	17.39	19.3	27.11	28.3	39.00	-	-		
560	13.7	21.87	21.6	33.98	31.7	48.93	-	-		
630	15.4	27.65	24.3	43.00	35.7	61.99	-	-		
710	17.4	35.21	27.4	54.64	40.2	78.67	-	-		
800	19.6	44.69	30.8	69.22	-	-	-	-		
900	22.0	56.44	34.7	87.73	-	-	-	-		
1000	24.4	69.55	38.5	108.15	-	-	-	-		

MATERIAL	GRADE	FACTOR
Steel		1,0000
Aluminium	1050/ 1060/ 1100	0,3462
Aluminium	2011	0,3604
Aluminium	2014	0,3568
Aluminium	2017	0,3568
Aluminium	2024	0,3533
Aluminium	3003	0,3498
Aluminium	5052	0,3427
Aluminium	5083	0,3392
Aluminium	6061	0,3462
Aluminium	6063	0,3462
Aluminium	7075	0,3568
Brass		1,0840
Bronze		1,1180
Columbium		1,1070
Copper		1,1480
Copper Alloys		1,1200
Gold		2,4590
Magnesium		0,2230
Molybdenum		1,3210
Niobium		1,1070
Tantalum		2,1420
Titanium		0,5750
High Speed Tool Steel		1,1200
Tungsten Moly Tool Steel		1,0400
Tungsten		2,4640
Zinc		0,9040
Zirconium		0,8350

Special Steel - main compoment Fe

GRADE	MATERIAL	DENSITY	FACTOR
1.3912	Alloy 36	8.20	1.0446
1.3917	Alloy 42	8.20	1.0446
1.3981	Alloy K	8.30	1.0572
1.4314	Alloy 304	7.90	1.0061
1.4324	Alloy 301	7.90	1.0061
1.4361	Alloy 1815	7.85	1.0000
1.4438	Alloy 317 L	7.85	1.0000
1.4462	Alloy 2205	7.80	0.9935
1.4465	Alloy 25252	7.96	1.0138
1.4529	Alloy 254	8.30	1.0572
S32550	Alloy 255	7.90	1.0061
1.4534	PH 13-8 Mo	7.80	0.9935
1.4539	Alloy 904L	8.05	1.0255
1.4542	17-4 PH	7.80	0.9935
1.4544	Alloy 321	7.90	1.0061
1.4545	15-5 PH	7.80	0.9935
1.4546	Alloy 347	7.90	1.0061
1.4548	17-4 PH	7.90	1.0061
1.4549	G-17-4 PH	7.90	1.0061
1.4563	Alloy 28	8.10	1.0316
1.4546	17-7 PH	7.80	0.9935
1.4574	PH 15-7 Mo	7.80	0.9935
1.4575	Alloy 2842	7.70	0.9809
1.4828	Alloy 309	7.90	1.0061
1.4841	Allloy 310	7.90	1.0061
1.4845	Alloy 310 S	7.90	1.0061
1.4864	Alloy DS	8.00	1.0191
1.4865	Alloy 330 G	8.00	1.0191
1.4876	Alloy 800 H/HAT	8.00	1.0191
1.4939	Jethete	7.80	0.9935
1.4943	A-286	7.95	1.0126
1.4944	A-286	7.95	1.0126
1.4957	G N-155	8.25	1.0507
1.4971	N-155	8.25	1.0507
1.4974	N-155	8.25	1.0507
1.4980	A-286	7.95	1.0126
1.6354	MA 300	8.05	1.0255
1.6355	MA 350	8.02	1.0255
1.6356	MA 350	8.02	1.0255
1.6358	MA 300	8.08	1.0292
1.6359	MA 250	8.05	1.0255
1.6604	30NCD16	7.85	1.0000
1.6944	4340	7.85	1.0000
1.7214	4130	7.85	1.0000
1.7220	4135	7.85	1.0000
1.7734	15CDV6	7.85	1.0000
1.7736	E-15CDV6	7.85	1.0000
G43400	Alloy 4340	7.80	0.9742
K44200	Alloy 300M	7.80	0.9742
S45000	Alloy 450	7.80	0.9742
S45500	Alloy 450	7.80	0.9742

Nickel Alloy

GRADE	MATERIAL	DENSITY	FACTOR
2.4053	Nickel 222	8.89	1.1321
2.4060	Nickel 205	8.89	1.1321
2.4061	Nickel 205	8.89	1.1321
2.4066	Nickel 200	8.89	1.1321
2.4068	Nickel 201	8.89	1.1321
2.4360	Alloy 400	8.83	1.1249
2.4361	LC-Alloy 400	8.83	1.1249
2.4375	Alloy K-500	8.46	1.0775
2.4602	Alloy C 22	8.69	1.1071
2.4605	Alloy 59	8.80	1.1208
2.4608	Alloy 333	8.56	1.0904
2.4610	Alloy C 4	8.64	1.1006
2.4617	Alloy B 2	9.22	1.1744
2.4618	Alloy G	8.30	1.0572
2.4619	Alloy G-3	8.30	1.0572
2.4630	Alloy 75	8.40	1.0697
2.4631	Alloy 80A	8.20	1.0446
2.4632	Alloy 90	8.20	1.0446
2.4634	Alloy 105	8.00	1.0191
2.4636	Alloy 115	8.00	1.0191
2.4642	Alloy 690	8.14	1.0369
2.4646	Alloy 214	8.05	1.0255
2.4650	Alloy C-263	8.36	1.0649
2.4654	Waspaloy	8.25	1.0507
2.4660	Alloy 20CB3	8.10	1.0316
2.4662	Alloy 901	8.15	1.0381
2.4663	Alloy 617	8.55	1.0892
2.4665	Alloy X	8.50	1.0827
2.4668	Alloy 718	8.19	1.0430
2.4669	Alloy X-750	8.25	1.0507
2.4670	Alloy 713 LC	8.01	1.0203
2.4671	Alloy 713	8.01	1.0203
2.4674	Alloy 100	7.75	0.9870
2.4676	Alloy M 246	8.50	1.0827
2.4816	Alloy 600	8.42	1.0726
2.4819	Alloy C-276	8.89	1.1322
2.4851	Alloy 601	8.20	1.0446
2.4856	Alloy 625	8.44	1.0750
2.4858	Alloy 825	8.18	1.0418
2.4869	Alloy 80/20	8.30	1.0572
2.4951	Alloy 75	8.37	1.0661
2.4952	Alloy 80A	8.19	1.0430
2.4969	Alloy 90	8.18	1.0418
2.4973	Alloy 41	8.20	1.0446
2.4975	Alloy 901	8.20	1.0446
2.4976	Alloy NiCr20MO	8.20	1.0446
2.4983	Alloy Co500	8.10	1.0316
N06230	Alloy 230	8.83	1.1249
N08330	Alloy 330	8.10	1.0316

Conversion Table
PVC Schedule 40/80

Scope:
This specification sheet covers the manufacturerÐs requirements for PVC Schedule 40 and 80 IPS pressure pipe. This pipe meets or exceeds the industry standards set forth by the American Society for Testing and Materials and NSF Interantional, Standards 14/61.

PVC Materials:
Rigid PVC (polyvinyl chloride) used in the extrusion of Schedule 40 and 80 pipe is of Type I, Grade 1 compound as stated in ASTM D-1784. Raw material used in extrusion shall contain the specified amounts of color pigment, stabilizers, and other additives approved by NSF International.

Dimensions:
Physical dimensions and tolerances of PVC Schedule 40 and 80 pipe meet the requirements of ASTM standard specification D-1785. Socket dimensions of belled end pipe meet the requirements of ASTM D-2672 or F-280.

Sizes:

Diameter (inches)	O.D. (inches)	Schedule 40 Wall Thickness	Schedule 40 PVC I.D.	Schedule 40 Pressure 73°F (psi)	Schedule 80 Wall Thickness	Schedule 80 PVC I.D.	Schedule 80 Pressure 73°F (psi)
1/2	.840	.109	.602	600	.147	.526	850
3/4	1.050	.113	.804	480	.154	.722	690
1	1.315	.133	1.029	450	.179	.936	630
1 1/4	1.660	.141	1.360	370	.191	1.255	520
1 1/2	1.900	.145	1.590	330	.200	1.476	470
2	2.375	.154	2.047	280	.218	1.913	400
2 1/2	2.875	.203	2.445	300	.276	2.290	420
3	3.500	.216	3.042	260	.300	2.864	370
4	4.500	.237	3.998	220	.337	3.786	320
6	6.625	.280	6.031	180	.432	5.709	280
8	8.625	.322	7.941	160	.500	7.565	250
10	10.750	.365	9.976	140	.593	9.493	230
12	12.750	.406	11.888	130	.687	11.294	230
14	14.000	.438	13.072	130	.750	12.412	220
16	16.000	.500	14.936	130	.843	14.224	220
18	18.000	.562	16.809	130	.937	16.014	220
20	20.000	.593	18.743	120	1.031	17.814	220
24	24.000	.687	22.544	120	1.218	21.418	210

Marking:
PVC Schedule 40 and 80 pipe is marked as prescribed in ASTM D-1785 to indicate the manufacturerÐs name or trademark, material designation code, the nominal pipe size, the Schedule size with the pressure rating in PSI for water at 73°F, the ASTM designation number D-1785 and the NSF seal for potable water.

Sample Specification:
All PVC Schedule 40 and 80 pipe shall conform to ASTM D-1785. Schedule 40 fittings shall conform to ASTM D-2466, Schedule 80 socket fittings shall conform to ASTM D-2467 and ASTM D-2464 for threaded Schedule 80 fittings. Belled end pipe socket dimensions shall conform to ASTM D-2672 or F-480.

T/sq.in.	lbs/sq.in.	kg/mm2	Mpa	t/sq.in	lb/sq.in.	kg/ mm2	Mpa
10	22,400	15.75	154,3	52	116,480	81.90	802,6
11	24,640	17.32	169,7	54	120,960	85.05	833,4
12	26,880	18.90	185,2	56	125,440	88.20	864,3
13	29,120	20.47	200,6	58	129,920	91.35	895,2
14	31,360	22.05	216,0	60	134,400	94.50	926,1
15	33,600	23.62	231,4	62	138,880	97.65	956,9
16	35,840	25.20	246,9	64	143,360	100.80	987,8
17	38,080	26.77	262,3	66	147,840	103.95	1018,7
18	40,320	28.35	277,8	68	152,320	107.10	1049,5
19	42,560	29.92	293,2	70	156,800	110.25	1080,4
20	44,800	31.50	308,7	72	161,280	113.40	1111,3
21	47,040	33.07	324,0	74	165,760	116.55	1142,1
22	49,280	34.65	339,5	76	170,240	119.70	1173,0
23	51,520	36.22	354,9	78	174,720	122.85	1203,9
24	53,760	37.80	370,4	80	179,200	126.00	1234,8
25	56,000	39.37	385,8	82	183,680	129.15	1265,6
26	58,240	40.95	401,3	84	188,160	132.30	1296,5
27	60,480	42.52	416,6	86	192,640	135.45	1327,4
28	62,720	44.10	432,1	88	197,120	138.60	1358,2
29	64,960	45.67	447,5	90	201,600	141.75	1389,1
30	67,200	47.25	463,0	92	206,080	144.90	1420,0
31	69,440	48.82	478,4	94	210,560	148.05	1450,8
32	71,680	50.40	493,9	96	215,040	151.20	1481,7
33	73,920	51.97	509,3	98	219,520	154.35	1512,6
34	76,160	53.55	524,7	100	224,000	157.50	1543,5
35	78,400	55.12	540,1	102	228,480	160.65	1574,3
36	80,640	56.70	555,6	104	232,960	163.80	1605,2
37	82,880	58.27	571,0	106	237,440	166.95	1636,1
38	85,120	59.85	586,5	108	241,920	170.10	1666,9
39	87,360	61.42	601,9	110	246,400	173.25	1697,8
40	89,600	63.00	617,4	112	250,880	176.40	1728,7
41	91,840	64.57	632,7	114	255,360	179.55	1759,5
42	94,080	66.15	648,2	116	259,840	182.70	1790,4
43	96,320	67.72	663,6	118	264,320	185.85	1821,3
44	98,560	69.30	679,1	120	268,800	189.00	1852,2
45	100,800	70.87	694,5	122	273,280	192.15	1883,0
46	103,040	72.45	710,0	124	277,760	195.30	1913,9
47	105,280	74.02	725,3	126	282,240	198.45	1944,8
48	107,520	75.60	740,8	128	286,720	201.60	1975,6
49	109,760	77.17	756,2	130	291,200	204.85	2007,5
50	112,000	78.75	771,7	132	295,680	208.00	2038,4

Comparison of Hardness Scales approx. ** and Tensile Stress Equivalents approx. (maximum value) in imperial and metric units

Rockwell 'C' Scale	Diamond Pyramid Scale HV10 HV30	Brinell		Tensile Stress Equivalents					Scler Scope Hardness Number	Rockwell		Diamond Pyramid Scale HV10 HV30
		Dia. Imp. For 10 mm Ball	Carbide Ball	Standard Ball	Tons/in2	1000 lb/in2	kg/mm2	MPa (N/mm2)				
67.7	900								96	85.6	67.7	900
67.0	880								95	85.0	67.0	880
66.3	860								93	84.7	66.3	860
65.5	840								92	84.2	65.5	840
64.8	820								90	83.8	64.8	820
64.0	800								88	83.4	64.0	800
63.3	780								87	83.0	63.3	780
62.5	760								86	82.6	62.5	760
61.7	740								84	82.2	61.7	740
61.0	725	2.44	630	-		-	-		82	81.8	61.0	725
60.5	710	2.45	627	-		-	-	-		81.5	60.5	710
60.0	698	2.50	601	-	132	295	208	2039	81	81.2	60.0	698
58.9	670	2.55	578	-	127	284	200	1961	78	80.6	58.9	670
57.1	630	2.60	555	-	122	273	192	1884	75	79.6	57.1	630
56.1	609	2.65	534	-	117	262	184	1807	73	79.0	56.1	609
54.4	572	2.70	514	-	112	250	176	1729	71	78.2	54.4	572
51.9	532	2.75	495	495	108	241	170	1668	68	76.9	51.9	532
50.7	517	2.80	477	477	105	235	165	1621	66	76.3	50.7	517
49.5	497	2.85	461	641	101	226	160	1559	64	75.5	49.5	497
47.5	470	2.90	444	444	98	219	155	1513	62	74.2	47.5	470
46.0	452	2.95	429	429	95	212	150	1467	60	73.5	46.0	452
44.8	437	3.00	415	415	92	206	145	1420	58	73.0	44.8	437
43.7	422	3.05	401	401	88	197	139	1359	56	72.5	43.7	422
42.4	408	3.10	388	388	85	190	134	1312	54	71.5	42.4	408
41.3	395	3.15	375	375	82	183	129	1266	52	71.0	41.3	395
39.9	381	3.20	363	363	80	179	126	1235	51	70.3	39.9	381
38.8	370	3.25	352	352	77	172	121	1189	49	69.8	38.8	370
37.7	359	3.30	341	341	75	168	118	1158	48	69.2	37.7	359
36.7	349	3.35	331	331	73	163	114	1127	46	68.8	36.7	349
35.0	337	3.40	321	321	71	159	111	1096	45	68.0	35.0	337
34.0	327	3.45	311	311	68	152	107	1050	43	67.5	34.0	327
33.0	318	3.50	302	302	66	147	104	1019	42	66.8	33.0	318
32.0	308	3.55	293	293	64	143	101	988	41	66.2	32.0	308
30.9	300	3.60	285	285	63	141	99	973	40	65.7	30.9	300
29.8	292	3.65	277	277	61	136	96	942	38	65.2	29.8	292
29.0	284	3.70	269	269	59	132	93	911	37	64.6	29.0	284
27.5	275	3.75	262	262	58	130	91	895	36	64.0	27.5	275
26.6	269	3.80	255	255	56	125	89	865	35	63.6	26.6	269
25.2	261	3.85	248	248	55	123	87	849	34	62.9	25.2	261
24.3	255	3.90	241	241	53	118	84	818	33	62.6	24.3	255
23.0	247	3.95	235	235	51	114	81	787	32	62.0	23.0	247
22.0	241	4.00	229	229	50	112	79	772	31	61.6	22.0	241
20.8	234	4.05	223	223	49	110	77	756	30	60.7	20.8	234
	228	4.10	217	217	48	107	76	-	-	-		228

Hardness "B" Scale	Diamond Pyramid Scale HV10 HV30	Brinell		Tensile Stress Equivalents					Scler Scope Hardness Number	Rockwell Hardness "B" Scale		Diamond Pyramid Scale HV10 HV30
		Dia. Imp. For 10 mm Ball	Carbide Ball	Standard Ball	Tons/in2	1000 lb/in2	kg/mm2	MPa (N/mm2)				
98	222	4.15	212	212	46	103	73	710	29	-	98	222
97	218	4.20	207	207	45	101	71	695	28	-	97	218
96	212	4.30	197	197	43	97	68	664	27	-	96	212
93	196	4.40	187	187	41	92	65	632	25	-	93	196
91	188	4.50	179	179	39	88	62	602	-	-	91	188
88.5	178	4.60	170	170	33	81	57	556	24	-	88.5	178
86	171	4.70	163	163	35	78	55	540	-	-	86	171
84.2	163	4.80	156	156	34	76	54	525	23	-	84.2	163
82	156	4.90	149	149	32	72	51	494	-	-	82	156
80	150	5.00	143	143	31	69	49	479	22	-	80	150
77	143	5.10	137	137	30	67	48	463	21	-	77	143
75	137	5.20	131	131	29.5	66	47	455	20.5	-	75	137
72.5	132	5.30	126	126	29	65	46	448	20	-	72.5	132
70	127	5.40	121	121	28	63	44	432	-	-	70	127
67	122	5.50	116	116	26	58	42	401	15	-	67	122

*These charts were prepared using information contained in B.S.860/1967. This standard differs significantly from the superseded standard B.S. 860/1939, and differs slightly from the conversion scales adopted by SAE and ASTM source.

** Where hardness acceptance values are specified and a conversion from one scale to another is necessary the source of the conversion data should be stated and understood by the parties involved.

Hardness

Hardness is the property of a material that enables it to resist plastic deformation, penetration, indentation, and scratching. Therefore, hardness is important from an engineering standpoint because resistance to wear by either friction or erosion by steam, oil, and water generally increases with hardness.

Hardness tests serve an important need in industry even though they do not measure a unique quality that can be termed hardness. The tests are empirical, based on experiments and obsevation, rather than fundamental therory. Its chief value is as an inspection device, able to detect certain differences in material when they arise even though these differences may be undefinable. For example, two lots of material that have the same hardness may or may not be alike, but if their hardness is different, the materials certainly are not alike.

Serveral methods have been developed for hardness testing. Those most often used are Brinell, Rockwell, Vickers, Tukon, Sclerscope, and the files test. The first four are based on indentation tests and the fifth on the rebound height of a diamond-tipped metallic hammer. The file test establishes the characteristics of how well a file takes a bite on the material.

As a result of many tests, comparisons have been prepared using formulas, tables, and graphs that show the relationships between the results of various hardness test of specific alloys. There is, however, no exact mathematical relation between any two of the methods. For this reason, the result of one type of hardness test converted to readings of another type should carry the notation"_____converted from_____" (for example "352 Brinell converted from Rockwell C-38").

Another convenient conversion is that of Brinell hardness to ulitmate tensile strenght. For quenched and tempered steel, the tensile strength (psi) is about 500 times the Brinell hardness number (provided the strength is not over 200,00 psi).

Conversion Table
inch/mm

To convert to millimeters - multiply inches x 25,4
To convert to inces - multiply millimeters x 0,03937*

*for slightly greater accuracy when converting to inches; divide millimeters by 25,4

inches fractional	decimal	metric mm	inches fractional	decimal	metric mm	inches fractional	decimal	metric mm
	0.0039	0.10000		0.55120	14.0000		1.8898	48.0000
	0.0079	0.20000	9/16	0.56250	14.2875		1.9291	49.0000
	0.0118	0.30000		0.57090	14.5000		1.9685	50.0000
1/64	0.0156	0.39690	37/64	0.57810	14.6844	2	2.0000	50.8000
	0.0157	0.40000		0.59060	15.0000		2.0079	51.0000
	0.0197	0.50000	19/32	0.59380	15.0813		2.0472	52.0000
	0.0236	0.60000	39/64	0.60940	15.4781		2.0866	53.0000
	0.0276	0.70000		0.61020	15.5000		2.1260	54.0000
1/32	0.0313	0.79380	5/8	0.62500	15.8750		2.1654	55.0000
	0.0315	0.80000		0.62990	16.0000		2.2047	56.0000
	0.0354	0.90000	41/64	0.64060	16.2719		2.2441	57.0000
	0.0394	1.00000		0.64960	16.5000	2 1/4	2.2500	57.1500
	0.0433	1.10000	21/32	0.65630	16.6688		2.2835	58.0000
3/64	0.0469	1.19060		0.66930	17.0000		2.3228	59.0000
	0.0472	1.20000	43/64	0.67190	17.0656		2.3622	60.0000
	0.0512	1.30000	11/16	0.68750	17.4625		2.4016	61.0000
	0.0551	1.40000		0.68900	17.5000		2.4409	62.0000
	0.0591	1.50000	45/64	0.70310	17.8594		2.4803	63.0000
1/16	0.0625	1.58750		0.70870	18.0000	2 1/2	2.5000	63.5000
	0.0630	1.60000	23/32	0.71880	18.2563		2.5197	64.0000
	0.0669	1.70000		0.72830	18.5000		2.5591	65.0000
	0.0709	1.80000	47/64	0.73440	18.6531		2.5984	66.0000
	0.0748	1.90000		0.74800	19.0000		2.6378	67.0000
5/64	0.0781	1.98440	3/4	0.75000	19.0500		2.6772	68.0000
	0.0787	2.00000	49/64	0.76560	19.4469		2.7165	69.0000
	0.0827	2.10000		0.76770	19.5000	2 3/4	2.7500	69.8500
	0.0866	2.20000	25/32	0.78130	19.8438		2.7559	70.0000
	0.0906	2.30000		0.78740	20.0000		2.7953	71.0000
3/32	0.0938	2.38130	51/64	0.79690	20.2406		2.8346	72.0000
	0.0945	2.40000		0.80710	20.5000		2.8740	73.0000
	0.0984	2.50000	13/16	0.81250	20.6375		2.9134	74.0000
7/64	0.1094	2.77810		0.82680	21.0000		2.9528	75.0000
	0.1181	3.00000	53/64	0.82810	21.0344		2.9921	76.0000
1/8	0.1250	3.17500	27/32	0.84380	21.4313	3	3.0000	76.2000
	0.1378	3.50000		0.84650	21.5000		3.0315	77.0000
9/64	0.1406	3.57190	55/64	0.85940	21.8281		3.0709	78.0000
5/32	0.1563	3.96880		0.86610	22.0000		3.1102	79.0000
	0.1575	4.00000	7/8	0.87500	22.2250		3.1496	80.0000
11/64	0.1719	4.36560		0.88580	22.5000		3.1890	81.0000
	0.1772	4.50000	57/64	0.89063	22.6219		3.2283	82.0000
3/16	0.1875	4.76250		0.90550	23.0000		3.2677	83.0000
	0.1969	5.00000	29/32	0.90625	23.0188		3.3071	84.0000
13/64	0.2031	5.15940	59/64	0.92188	23.4156		3.3465	85.0000
	0.2165	5.50000		0.92520	23.5000		3.3858	86.0000
7/32	0.2188	5.55630	15/16	0.93750	23.8125		3.4252	87.0000
15/64	0.2344	5.95310		0.94490	24.0000		3.4646	88.0000
	0.2362	6.00000	61/64	0.95313	24.2094	3 1/2	3.5000	88.9000
1/4	0.2500	6.35000		0.96460	24.5000		3.5039	89.0000
	0.2559	6.50000	31/32	0.96875	24.6063		3.5433	90.0000
17/64	0.2656	6.74690		0.98430	25.0000		3.5827	91.0000
	0.2756	7.00000	63/64	0.98438	25.0031		3.6220	92.0000
9/32	0.2813	7.14380	1	1.00000	25.4000		3.6614	93.0000

inches fractional	decimal	metric mm	inches fractional	decimal	metric mm	inches fractional	decimal	metric mm
	0.2953	7.50000		1.00390	25.5000		3.7008	94.0000
19/64	0.2969	7.54060		1.02360	26.0000		3.7402	95.0000
5/16	0.3125	7.93750		1.04330	26.5000		3.7795	96.0000
	0.3150	8.00000		1.06300	27.0000		3.8189	97.0000
21/64	0.3281	8.33440		1.08270	27.5000		3.8583	98.0000
	0.3346	8.50000		1.10240	28.0000		3.8976	99.0000
11/32	0.3438	8.73130		1.12200	28.5000		3.9370	100.000
	0.3543	9.00000		1.14170	29.0000	4	4.0000	101.600
23/64	0.3594	9.12810		1.16140	29.5000		4.3307	110.000
	0.3740	9.50000		1.18110	30.0000	4 1/2	4.5000	114.300
3/8	0.3750	9.52500		1.22050	31.0000		4.7244	120.000
25/64	0.3906	9.92190	1 1/4	1.25000	31.7500	5	5.0000	127.000
	0.3937	10.0000		1.25980	32.0000		5.1181	130.000
13/32	0.4063	10.3188		1.29920	33.0000		5.5118	140.000
	0.4134	10.5000		1.33860	34.0000		5.9055	150.000
27/64	0.4219	10.7156		1.37800	35.0000	6	6.0000	152.400
	0.4331	11.0000		1.41730	36.0000		6.2992	160.000
7/16	0.4375	11.1125		1.45670	37.0000		6.6929	170.000
	0.4528	11.5000		1.49610	38.0000		7.0866	180.000
29/64	0.4531	11.5094	1 1/2	1.50000	38.1000		7.4803	190.000
15/32	0.4688	11.9063		1.53540	39.0000		7.8740	200.000
	0.4724	12.0000		1.57480	40.0000	8	8.0000	203.200
31/64	0.4844	12.3031		1.61420	41.0000		9.8425	250.000
	0.4921	12.5000		1.65350	42.0000	10	10.000	254.000
1/2	0.5000	12.7000		1.69290	43.0000	20	20.000	508.000
	0.5118	13.0000		1.73230	44.0000	30	30.000	762.000
33/64	0.5156	13.0969	1 3/4	1.75000	44.4500	40	40.000	1016.00
17/32	0.5313	13.4938		1.77170	45.0000	60	60.000	1524.00
	0.5315	13.5000		1.81100	46.0000	80	80.000	2032.00
35/64	0.5469	13.8906		1.85040	47.0000	100	100.00	2540.00

Inches	X	25.4	=	Millimeters
Millimeters	X	0.03937	=	Inches
Feet	X	0.3048	=	Metres
Yards	X	0.9144	=	Metres
Metres	X	39.37	=	Inches
Metres	X	3.2808	=	Yards
Kilometres	X	0.6214	=	Miles
Miles	X	1.6093	=	Kilometres
Square centimetres	X	0.1550	=	Square inches
Square inches	X	6.4516	=	Square centimetres
Sqare metres	X	10.7639	=	Sqare Metres
Sqare metres	X	1.1960	=	Sqare yards
Sqare yards	X	0.8361	=	Sqare metres
Sqare feets	X	0.0929	=	Sqare metres
Cubic centimetres	X	0.0610	=	Cubic inches
Cubic inches	X	16.3871	=	Cubic centimetres
Cubic metres	X	35.3147	=	Cubic feet
Cubic feet	X	0.0283	=	Cubic metres
Centimetres4	X	0.024025	=	Inches4
Inches4	X	41.623	=	Centimetres4
Grams	X	15.432	=	Grains
Grains	X	0.0648	=	Grams
Kilograms	X	2.2046	=	Pounds
Pounds	X	0.45359	=	Kilograms
Metric tons (1000 kilograms)	X	0.9842	=	Long Tons
Long Tons	X	1.016	=	Metric tons
Kilograms per square metre	X	0.2048	=	Pounds per square foot
Pound per square foot	X	4.882	=	Kilograms per square metre
Grams persquare metre	X	0.02949	=	Ounces per square yard
Ounces per square yard	X	33.9056	=	Grams per square metre
Kilograms per square centimetre	X	14.223	=	Pounds per square inch
Pounds per square inch	X	0.0703	=	Kilograms per square cetimetre
Tons per square inch	X	1.5749	=	Kilograms per square milimetre
Kilograms per cubic centimetre	X	36.1273	=	Pounds per cubic inch
Kilograms per cubic metre	X	0.06243	=	Pounds per cubic foot
Kilograms per cubic metre	X	1.68555	=	Pounds per cubic yard
Pounds per cubic inch	X	0.0277	=	Kilograms per cubic centimetre
Pounds per cubic foot	X	16.019	=	Kilograms per cubic metre
Pounds per cubic yard	X	0.5933	=	Kilograms per cubic metre
Kilograms per metre run	X	2.016	=	Pounds per yard
Kilograms per metre run	X	0.672	=	Pounds per foot
Pounds per yard run	X	0.496	=	Kilograms per metre
Pounds per foot run	X	1.488	=	Kilograms per metre

The above factors are approximate

	psi	kPa	kg/cm^2	cm H_2O	ft H_2O	inches Hg
psi	1	6.894.757	0.070306958	70.306.927	2.306.723	203.602
kPa	0.1450377	1	0.01019716	1.019.745	0.3345618	0.2952997
kg/cm^2	14.233.343	9.806.694	1	1.000.026	32.809.312	2.895.901
cm H_2O	0.0142229	0.0980634	0.00099997	1	0.032808	0.0289581
ft H_2O	0.433515	2.968.916	0.03047912	30.48	1	0.882646
inches Hg	0.4911542	3.386.389	0.0345316	3.453.253	1.132.957	1
mm Hg	0.0193368	0.1333225	0.00135951	1.359.554	0.0446046	0.039370079
inches H_2O	0.03612628	0.2490819	0.00254219	2.54	0.08333	0.0735539
oz / inches^2	0.0625	0.4309223	0.004394308	4.394.308	0.14417	0.12725125
at	14.696	10.132.535	1.033.231	10.332.633	338.995	299.213
bar	14.5038	100	1.019.716	10.197.466	334.833	29.53
mbar	0.0145	0.1	0.001019	1.019	0.003456	0.02953
Mpa	0.00689	0.001	10.197	10197.45	334.56	295.299

	inches H_2O	oz / inches^2	at	bar	mbar	Mpa
psi	2.768.068	16	0.068046	0.06894757	689.476	0.00689
kPa	401.472	2.320.603	0.009669235	0.01	10	0.001
kg/cm^2	393.711.806	22.757.349	0.967841569	0.98066494	1013.25	0.09806
cm H_2O	0.3937	0.227566	0.000967814	0.000980634	0.9806	0.00098
ft H_2O	12	693.624	0.02949896	0.02968961	29.689	0.00298
inches Hg	13.595.484	785.847	0.0334211	0.03386389	338.639	0.00386
mm Hg	0.535255	0.3093888	0.001315789	0.001333225	133.322	0.00013
inches H_2O	1	0.57802	0.00245825	0.002490819	249.089	0.000249
oz inches^2	173.004	1	0.004252875	0.004309223	4.309	0.0004309
at	406.794	235.136	1	10.132.535	1013.25	0.1013
bar	4.018.596	2.320.608	0.986923	1	1000	0.1
mbar	0.40146	0.32306	0.00099	0.001	1	0.0001
Mpa	4014.74	2.320.603	9.669	0.1		1

C.C.C.N.C
Customs Co-operation Council Nomenclature (formerly B.T.N – Brussel Tariff Nomenclature):

Demurrage
Charges made for delay to vessels or godds after a stated free period.

D.N.V.
Det Norske Veritas

E.E.C.
European Economic Community

E.T.A.
Estimated Time of Arrival

E.T.D.
Estimated Time of Departure

E.T.S.
Estimated Time of Sailing

Ex Works
The consignee is responsible for all carriage/freight charges, any taxes, duty handling charges an road transport from the supply source onwards. The supplier will normally load the materials at his factory, but there his responsibility ends.

F.O.T.
Free on Truck. Supplier loads materials free on to vehicle from whence his responsibility ends.

F.A.S.
Free Alongside. Includes delivery to airport, depot or docksas part of invoiceprice to the consignee. Does not include any charges made for unloading the vehicle.

F.O.B.
Free on Board. One stage further than F.A.S. The supplier has included in his invoice to the consignee the cost of delivery to the airport, depot or docks, handling an documentation chargesaboard the carrying vessel. The consignee is responsible for all handling, customs clearence, plus any duty taxes on arrival.

F.O.B. LT
Free on Board Liner Terms. Applies mainly to Antwerp & Rotterdam ports. Definition as per F.O.B.above, exept supplier is responsible for cots for materials landed on quayside. Price for loading over ship's rail is usually included in fright price payable by company arranging delivery to destinaation port.

F.I.O.
Free In and Out. Charterer of vessel pays for cost of loading and discharging cargo.

F.C.R.
Forwarder Certificate of Receipt

G.F.N.
Gross for Net. Gross weight to be charged wich may include packing used to protect an bundlematerials.

L/C*
Letter of Credit

L.R.S.
Lloyds Register of Shipping

M.R.
Mate's Receipt

M/V
Motor Vessel

N.S.S.N.
National Standart Shipping Note

Pro-forma
A specimen document, usually an invoice, presented to client for approval prior to offical order placement and payment of goods.

S.A.D.
Single Administrative Document (for Customs)

Without Engagement
No liability to accept an offer at the price quoted if price go against the seller in the meantime

*Please ensure Letters of Credit always show that Bilss of Lading will be accept if clauses relating to rust-staining/oxidation of materials are shown.

Outside Diameter mm	Outside Diameter inch (N.B.)	measuring incl. mm wall	m/m3	x measuring	measuring/m with 100 €/m3
2.020		85.5	0.25	4.08	208.63
1.920		81.5	0.27	3.69	188.99
1.820		77.0	0.30	3.312	169.36
1.720		72.5	0.34	2.96	151.26
1.620	64”	68.5	0.38	2.62	134.18
1.520		64.0	0.43	2.31	118.13
1.420		60.0	0.50	2.02	103.10
1.321	52”	55.5	0.57	1.75	89.22
1.270	50”	53.5	0.62	1.61	82.47
1.219	48”	51.5	0.67	1.49	75.98
1.168	46”	49.4	0.73	1.36	69.75
1.120	44”	47.4	0.80	1.25	64.14
1.067	42”	45.1	0.88	1.14	58.21
1.016	40”	43.0	0.97	1.03	52.78
965	38”	40.8	1.07	0.93	47.61
914	36”	38.7	1.20	0.84	42.71
864	34”	36.5	1.34	0.75	38.17
813	32”	34.4	1.51	0.66	33.80
762	30”	32.2	1.72	0.58	29.69
711	28”	30.1	1.98	0.51	25.85
660	26”	27.9	2.30	0.44	22.27
610	24”	25.8	2.69	0.37	19.03
559	22”	23.6	3.20	0.31	15.98
521		22.0	3.68	0.27	13.88
508	20”	21.5	3.88	0.26	13.20
470		19.9	4.53	0.22	11,29
457.2	18”	19.3	4.78	0.21	10.69
419		17.7	5.70	0.176	8.98
406.4	16”	17.2	6.05	0.165	8.45
368		15.5	7.38	0.135	6.92
355.6	14”	15.0	7.91	0.127	6.47
323.9	12”	13.7	9.53	0.105	5.36
318		13.4	9.89	0.101	5.17
298.5		12.6	11.22	0.089	4.56
273	10”	11.5	13.42	0.075	3.81
267		11.3	14.03	0.071	3.65
244.5		10.3	16.73	0.06	3.06
219.1	8”	9.2	20.83	0.048	2.45
216		9.1	21.43	0.047	2.39
193.7		8.2	26.65	0.038	1.92
177.8		7.5	31.63	0.032	1.62
168.3	6”	7.1	35.30	0.028	1.45
165.1		6.9	36.69	0.027	1.40
159		6.7	39.56	0.025	1.29
152.4		6.4	43.06	0.023	1.19
141.3	5”	5.9	50.09	0.02	1.02
139.7		5.9	51.24	0.02	1.00
133		5.6	56.53	0.018	0.90
127		5.3	62.00	0.016	0.82
121		5.1	68.30	0.015	0.75
114.3	4”	4.8	76.54	0.013	0.67
108		4.5	85.73	0.012	0.60
101.6	3 1/2”	4.3	96.88	0.01	0.53
88.9	3”	3.7	126.53	0.008	0.40
76.1		3.2	172.68	0.006	0.30
73.0	2 1/2”	3.0	187.65	0.005	0.27
70.0		2.9	204.08	0.005	0.25
63.5		2.6	248.00	0.004	0.20
60.3	2”	2.5	275.03	0.004	0.18
57.0		2.4	307.79	0.003	0.17
51.0		2.1	384.47	0.003	0.13

ABRASIVE – A substance capable of grinding away another material.

ACID-BRITTLENESS - Brittleness resulting from pickling steel in acid; hydrogen, formed by the interaction between iron and acid, is partially absorbed by the metal, causing acid brittleness.

AGE HARDENING - The term as applied to soft, or low carbon steels, relates to a wide variety of commercially important, slow, gradual changes that take place in properties of steels after the final treatment. These changes, which bring about a condition of increased hardness, elastic limit, and tensile strength with a consequent loss in ductility, occur during the period in which the steel is at normal temperatures.

AGING - Spontaneous change in the physical properties of some metals, which occurs on standing, at atmospheric temperatures after final cold working or after final heat treatment. Frequently synonymous with the term „Age-Hardening".

AIR COOLING - Cooling of the heated metal intermediate in rapidity between slow furnace cooling and quenching, in which the metal is permitted to stand in the open air.

AIR HARDENING STEEL - Alloy steel that may be hardened by cooling in air from a
temperature above the transformation range. Such steels attain their martensitic structure without going through the quenching process Additions of chromium, nickel, molybdenum and manganese are effective toward this end.

AISI STEELS - Stalls of the American Iron and Steel Institute. Common alloy steels have been numbered in a system essentially the same as the SAE. The Aisi system is more elaborate than the SAE in that all numbers are preceded by letters: „A" represents basic
open-hearth alloy steel, „B" acid Bessemer carbon steel, „C" basic open-hearth carbon steel, „CB" either acid Bessemer or basic open-hearth carbon steel, „E" electric furnace alloy steel.

ALLOY - A substance having metallic properties and composed of two or more chemical elements of which al least one is metal.

ALLOY STEEL - Steel containing significant quantities of alloying elements (other than carbon and the commonly accepted amounts of manganese, silicon, sulfur and phosphorus) added to effect changes in mechanical or physical properties. Those containing less than 5% total metallic alloying elements tend to be termed low-alloy steels, and those containing more than 5% tend to be termed high-alloy steels.

ALLOYING ELEMENT - An element added to a metal, that effects changes in structure and properties.

ALUMINIUM - (Chemical symbol Al) Element No.13 of the periodic system; Atomic weight 26.97; silvery white metal of valence 3; melting point 1220 F. ;boiling point approximately 4116F. ; ductile and malleable; stable against normal atmospheric corrosion resistance , but attacked by both acids and alkalis. Aluminium is used extensively in articles requiring lightness, corrosion resistance, electrical conductivity, etc. Its principal functions as an alloy in steel making; (1) Deoxidizes efficiently (see Aluminium killed) (2) Restricts grain growth (by forming dispersed oxides or nitrides) (3) Alloying element in nitriding steel.

ALUMINIUM KILLED STEEL – A steel where aluminium has been used as a deoxidizing agent. (See Killed Steel.)

ANNEALING - A heating and cooling operation implying a relatively slow cooling. Annealing is a comprehensive term. The purpose of such a heat treatment may be to remove stresses; to induce softness; to alter ductility; toughness; electrical magnetic, or other physical properties; to reline the crystalline structure; to remove gases; to produce a definite microstructure. In annealing, the temperature of the operation and the rate of cooling depend upon the material being heat-treated and the purpose of the treatment.

ARC WELDING - A group of welding processes wherein the metal or metals being joined are coalesced by heating with an arc, with or without the application of pressure and with or without the use filler metal.

A.S.T.M. - Abbreviation for American Society for Testing Material –An organization for Issuing standard specifications on materials, including metals and alloys.

AUSTEMPERING - Cooling an austenitized steel at a rate high enough to suppress formation of high-temperature transformation products, then holding the steel at a temperature below that for pearlite formation and above that for martensite formation until transformation to an essentially bainitic structure is complete.

AUSTENITE - Phase in certain steels, characterized as a solid solution, usually of carbon or iron carbide, in the gamma form of iron. Such steels are known as „austenitic". Austenite
is stable only above 1333 F. in a plain carbon steel, but the presence of certain alloying elements, such as nickel and manganese, stabilizes the austenitic form, even at normal temperatures.

AUSTENITIC STEEL - Steel which, because of the presence of alloying elements, such as manganese, nickel, chromium, etc., shows stability of Austenite at normal temperatures.

BAINITE - A slender, needle-like (acicular) microstructure appearing in spring steel rip characterized by toughness and greater ductility than tempered Martensite. Bainite is a decomposition product of Austenite (see Austensite) best developed at interrupted holding temperatures below those forming fine pearlite and above those giving Martensite.

BASIC OXYGEN PROCESS - A Steel making process wherein oxygen of the highest purity is blown onto the surface of a bath of molten iron contained in a basic lined and ladle shaped vessel. The melting cycle duration is extremely short with the quality comparable to Open Hearth Steel.

BASIC PROCESS - A steel making process either Bessemer, open hearth, or electric, in which the furnace is lined with a basic refractory. A slag, rich in lime, being formed and phosphorus removed.

BATH ANNEALING - Is immersion in a liquid bath (such as molten lead or fused salts) held at an assigned temperature when a lead bath is used, the process is known as lead annealing.

BEADING - Raising a ridge on sheet metal.

BEND TEST - Various tests used to determine the toughness and ductility of flat rolled metal sheet, strip or plate, in which the material is bent around its axis or around an outside radius. A complete test might specify such a bend to be both with and against the direction of grain. For testing, samples should be edge filed to remove burrs and any edgewise cracks resulting from slitting or shearing. If a vice is to be used the line the jaws with some soft metal or brass, so as to permit a free flow of the metal in the sample being tested

BESSEMER PROCESS - A steel making process in which air is blown through the molten iron so that the impurities are thus removed by oxidation.

BILLET - A solid, semi-finished steel round or square product that has been hot worked by forging, rolling or extrusion usually smaller than a bloom.

BLACK OIL TEMPERED SPRING STEEL STRIP - (Scaleless Blue)-A flat cold rolled usually .70/.80 medium high carbon spring steel strip, blue-black in colour, which has been quenched in oil and drawn to desired hardness. While it looks and acts much like blue tempered spring steel and carries a Rockwell hardness of C44/47, it has not been polished and is lower in carbon content. Used for less exacting requirements than clock spring steel, such as snaps, lock springs, hold down springs, trap springs, etc. It will take a more severe bend before fracture than will clock spring, but it does not have the same degree of spring-back.

BLAST FURNACE - A vertical shaft type smelting furnace in which an air blast is used, usually hot, for producing pig iron. The furnace is continuous in operation using iron ore, coke and limestone as raw materials that are charged at the top while the molten iron and slag are collected at the bottom and are tapped out at intervals.

BLISTER - A defect in metal produced by gas bubbles either on the surface or formed beneath the surface while the metal is hot or plastic. Very fine blisters are called “pin-head” or “pepper” blisters.

BLOOM - (Slab, Billet, Sheet-Bar.) Semi-finished products, hot rolled from ingots. The chief differences are in their cross sectional areas in ratio of width to thickness, and in their intended use.

BLOOMING-MILL - A mill used to reduce ingots to blooms, billets, slabs, sheet-bar etc., (See Semi-finished Steel)

BLOWHOLE - A cavity produced during the solidification of metal by evolved gas, which in failing to escape is held in pockets.

BLUE TEMPERED SPRING STEEL STRIP - (See Tempered Spring Steel Strip)

BLUING - (1) Sheets - A method of coating sheets with thin, even film of bluish-black oxide, obtained by exposure to an atmosphere of dry steam or air, at a temperature of about 1000° F.,generally this is done during box-annealing. (2) Bluing of tempered spring steel strip; a oxide film blue in color produced by low temperature heating.

BORON - (chemical SymbolB) Element N. 5 of the periodic system, (atomic weight 10.82)
It is gray in color, ignites at abourt 1112° F. and burns with a brilliant green flame, but its melting point in a non-oxidizing atmosphere is about 4000° F. Boron is used in steel in minute quantites for one purpose only-to increase the hardenability as in case hardening and to increase strength and hardness penetration.

BOW - (See Camber.)

BOX ANNEALING - A process of annealing a ferrous alloy in a suitable closed metal container, with or without packing materials, in order to minimize oxidation. The charge is usually heated slowly to a temperature below the transformation range, but sometimes above or within it, and is then cooled slowly.

BRALE - A diamond penetrator, conical in shape, used with a Rockwell hardness tester for hard metals.

BRAZING - Joining metals by fusion of nonferrous alloys that have melting points above 800° F., but lower than those of the metals being joined.This may be accomplished by means of a torch (torch brazing), in a furnace (furnace brazing) or dipping in a molten flux bath (dip of flux brazing)

BRIGHT ANNEALING - A process of annealing usually carried out in a controlled furnace atmosphere so that surface oxidation is reduced to a minimum and the surface remains relatively bright.

BRIGHT BASIC WIRE - Bright steel wire, slightly softer than Bright Bessemer Wire. Used for round head wood screws, bolts and rivets, electrics welded chain, etc.

BRIGHT COMMERCIAL FINISH - Refer to Finishes

BRINELL HARDNESS (TEST) - A common standard method of measuring the hardness of certain metals. The smooth surface of the metal is subjected to indentation by a hardened steeel ball under pressure or load. A special microscope measures the diameter of the resultant indenation in the metal surface, and the Brinell hardness value is read from a chart or calculated by formula.

BRITTLENESS – The tendency of a material to fracture without first undergoing significant plastic deformation.

BROACHING - Multiple shaving, accomplished by pushing a tool with stepped cutting edges along the work, particularly through holes.

BROWN & SHARPE GAGES (B&S) - A standard series of sizes arbitrarily indicated, as by numbers, to which the diameter of wire or thickness of sheet metal is usually made and which is used in the manufacture of brass, bronze, cooper. copper-base alloys and alluminium. These gage numbers have definite relationship to each otheer. By this system the decimal thickness

is reduced by 50% every six gage numbers-while temper is expressed by the number of B&S gage number in thickness reduction, there is assigned a hardness value of ? hard. To illustrate: One number hard= ? hard, two numbers hard= ? hard, etc.

BUCKLE - Alternate bulges or hollows recurring along the length of the product with the edges remaining relatively flat.

BURNING - Heating a metal beyond the temperature limits allowable for the desired heat treatment, or beyond the point where serious oxidation or other detrimental action begins.

BURR - A thin ridge or roughness left by a cutting operation such as in metal slitting, shearing, blanking or sawing. This is common to a No. 3 slit edge in the case of steel.

BUTT WELDING – Joining two edges or ends by placing one against the other and welding them.

CAMBER OR BOW - Edgewise curvature. A lateral departure of a side edge of sheet or strip metal from a straight line.

CARBIDE - A ocmpound of carbon with one or more metallic elements.

CARBON (Chemical symbol C) - Element No. 6 of the periodic system; atomic weight 12.01; has three allotropic modifications, all non-metallic. Carbon is present in partically all ferrous alloys, and has tremendous effect on the properties of the resultant metal. Carbon is also an essential component of the cemented carbides. Its metallurgical use, in the form of coke, for reduction of oxides, is very extensive.

CARBON RANGE - In steel specifications, the carbon range is the difference between minimum and maximum amount of carbon acceptable.

CARBON STEEL - Common or ordinary steel as contrasted with special or alloy steels, which contain other alloying metals in addition to the usual constituents of steel in their common percentages.

CARBURIZING - (Cementation.) Adding carbon to the surface of iron-base alloys by absorption through heating the metal at a temperature below its melting point in contact with cabonaceous solids, liquids or gases. The oldest method of case hardening.

CASE - In a ferrous alloy,the outer portion that has been made harder than the inner portion, or core (see hardening)

CASE HARDENING - A generic term covering several processes applicable to steel that change the chemical composition of the surface layer by absporption of carbon or nitrogen, or a mixture of the two, and, by diffusion, create a concentration gradient.

CHATTER MARKS (Defect) - Parallel indentations or marks appearing at right angles to edge of strip forming a pattern at close and regular intervals, caused by roll vibrations.

CHEMICAL POLISHING - Improving the specular reflectivity of a metal surface by chemical treatment.

CHROMIUM (Chemical symbol Cr) - Element No.24 of the periodic system, atomic weight 52.01. It is of bright silvery color, relatively hard. It is strongly resistant tob atmospheric and other oxidation. It is of great value in the manufascture of Stainless Steel as an iron-base alloy Chromium platinghas also become a large outlet for the metal. Itrs principal functions as an alloy in steel making, (1) increases resistance to corrision and oxidation (2) increases hardenability (3) adds some strength at high temperatures (4) resists abrasion and wear (with high carbon)

CHROMIUM-NICKEL STEEL - Steel usually made by the electric furnace process in which chromium and nickel paricipate as alloying elements.The stainless steel of 18% chromium and 8% nickel are the better known of the chromium nickel types.

CLAD METAL - A cmposite metal containing two or three layers that have been bonded together. The bonding may have been accomplished by co-rolling, welding, heavy chemical deposition or heavy electroplating.

CLOCK SPRING STEEL - (see Tempered and Polished Spring Steel Strip .90/.103 carbon range.)

COIL SET - A lengthwise curve or set found in coiled strip metals following its coil pattern. A departure from longitudinal flatness. Can be removed by roller or stretcher leveling from metals in the softer temper ranges.

COILS - Coiled flat sheet or strip metal-usually in one continuous piece or length.

COIL BREAKES - Creases or Ridges appearing in sheets as parallel lines transverse to the direction of rolling and generally extending across the width of the sheet.

COINING - A process of impressing images or characters of the die and punch onto a plane metal surface.

COLD REDUCED STRIP - Metal strip, made from hot-rolled strip, by rolling on cold-reduction mills.

COLD REDUCTION - Reduction of metal size, usually by rolling or drawing particularly thickness, while the metal is maintained at room temperature or below the recrystallization temperature of the metal.

COLD ROLLED FINISH - Finish obtained by cold rolling plain pickled sheet or strip with a lubricant resulting in a relatively smooth appearance.

COMMERCIAL QUALITY STEEL SHEET - Normally to a ladle analysis of carbon limit at 0.15 max. A Standard Quality Carbon Steel Sheet.

CONTINUOUS CASTING - A casting technique in which the ingot is continuously solidfied while it is being poured, and the length is not determined by mold dimensions.

CONTINUOUS FURNACE - Furnace, in which the material being heated moves steadily through the furnace.

CONTINUOUS PICKLING - Passing sheet or strip metal continuously through a series of pickling and washing tanks.

CONTROLLED ATMOSPHERE FURNACES - A furnace used for bright annealing into which specially prepared gases are introduced for the purpose of maintaining a neutarl atmosphere so that no oxidizing reaction between metal and atmosphere takes place.

CORROSION - Deterioration of a metal by chemical or electrochemical reaction with its environement.

CORROSION EMBRITTLEMENT - The embrittlement caused in certain alloys by exposure to a corrosive environment.

CROP - The defective ends of a rolled or forged product which are cut off and discarded.
Glossary

CROSS BREAK - This term also applied to transverse ribs or ripple.

CROSS ROLLING - A (hot) rolling process in which rolling reduction is carried out in a direction prpendicular to, as well as a direction parallel to, the length of the original slab.

CROWN - Increased thickness in the center of metal sheet or strip as compared with thickness at the edge.

CRYSTALLIZATION – The formation of crystals by the atoms assuming definite positions in a crystal lattice. This is what happens when a liquid metal solidifies. (Fatigue, the failure of metals under repeated stresses, is sometimes falsely attributed to crystallization.)

CYANIDING – Surface hardening of an iron-base alloy article or portion of it by heating at a suitable temperature in contact with a cyanide salt, followed by quenching.

DEAD FLAT – Perfectly flat. As pertaining to sheet, strip or plate.

DEAD SOFT STEEL – Steel, normally made in the basic open-hearth furnace or by the basic oxygen process with carbon less than 0.10% and manganese in the 0.20-0.50% range, completerly annealed.

DEAD SOFT TEMPER (No. 5 TEMPER) – Condition of maximum softness commercially attainable in wire, strip, or sheet metal in the annealed state. Hardness of an R/B 55 max. Standard hardness range R/B 55 max.

DEBURRING – A method whereby the raw slit edge o metal is removed by rolling or filing.

DECARBURIZATION – Loss of carbon from the surface of a ferrous alloy as a result of heating in a medium that reacts with carbon.

DEEP DRAWING – The process of cold working or drawing sheet or strip metal blanks by means of dies on a press into shapes which are usually more or less cup-like in character involving considerably plastic deformation of the metal. Deep-drawing quality sheet or strip steel, ordered or sold on the basis of suitability for deep- drawing.

DEGASSING – Removing gases from the molten metal by means of a vacuum process in combination with mechanical action.

DEOXIDATION – (1) Removal of oxygen from molten metals by use of suitable chemical agents. (2) Sometimes refers to removal of undesirable elements other than oxygen by the introduction of elements or compounds that readily react with them.

DISH – A concave surface departing from a straight line edge to edge. Indicates transverse or across the width.

DRAWING BACK – Reheating after hardening to a temperature below the critical for the purpose of changing the hardness of the steel. (See Tempering)

DRILL ROD – A term given to an annealed and polished high carbon tool steel rod usually round and centerless ground. The sizes range in round stock from .013 to 1-1/2" diameter. Commercial qualities embrace water and oil hardening grades. Drill Rods are used principally by machinists and tool and die makers for punches, drills, taps, dopel pins, screw machine parts, small tools, etc.

DUCTILITY – The capcacity of a material to deform plastically without fracturing. Ductility is usually measured by elongation and reduction of area as determined in a tensile test.

EARING – Wavy projections formed at the open end of a cup or shell in the course of deep drawing because of differences in directional properties. Also termed scallop. See non-scalloping.

EDGES – Many types of edges can be produced in the manufacture of flat rolled metal products. Over the years the following types of edges have become recognized as standard in their respective fields.

STRIP STEELS and STAINLESS STRIP

No.1 Edge-A smooth, uniform, round or square edge, eihter slit or filed or slit and edge rolled as specified. Width tolerance +/-.005".

No.2 Edge-A natural round mill edge carried through from the hot rolled band. Has not been slit, filed, or edge rolled. Tolerances not closer than hot-rolled strip limits.

No.3 Edge-Square, produced by slitting only. Not filed. Width tolerances close.

No.4 Edge-A round edge produced by edge rolling either form a natural mill edge or from slit edge strip. Not as perfect as No.1 edge Width tolerances liberal.

No.5 Edge-An approximately square edge produced by slitting and filing or slitting and rolling to remove burr.

No.6 Edge-A square edge produced by square edge rolling, generally from square edge hot-rolled occasio nally from slit strip. Width tolerances and finish not as exacting as No.1 edge.

EDGE FILING – A method whereby the raw or slit edges of strip metal are passed or drawn one or more times against a series of files, mounted at various angles. This method may be used for deburring only or filing to a specific contour including a completely rounded edge.

EDGING – The dressing of metal strip edges by rolling, filing or drawing.

ELASTIC LIMIT – Maximum stress that a material will stand before permanent deformation occurs.

ELECTRIC FURNACE STEEL – Steel made in any furnace where heat is generated electrically, almost always by arc.

ELONGATION – Increase in length which occurs before a metal is fractured, when subjected to stress. This is usually expressed as a percentage of the original length and is a measure of the ductility of the metal.

EMBOSSING – Raising or indenting a design in relief on a sheet or strip of metal by passing between rolls of desired pattern.

ENDURANCE LIMIT – Maximum alternating stress which a given material will withstand for an indefinite number of times wihtout causing fatigue failure.

ETCHING – Subjecting the surface of a metal to chemical or electrolytic attack to reveal structural details.

EXTRUSION – Shaping metal into a chosen continuous form by forcing it through a die of appropriate shape.

FATIGUE – The phenomenon leading to fracture under repeated or flutuating stresses.

FERROUS – Related to iron. Ferrous alloys are, therefore, iron base alloys.

FILED EDGES – Finished edges, the final contours of which are produced by drawing the strip over a series of small steel files.

FINISHED STEEL – Steel that is ready for the market without further work or treatment. Blooms, billets, slabs, sheet bars, and wire rods are termed “semifinished”.

FINISHES – The surface appearance of the various metals after final treatment such as rolling, etc. Over ther years the following finshes have become recognized as standard in their respective fields.

COLD ROLLED STRIP STEELS
No.1 Finish-A dull finish produced without luster by rolling on roughened rolls.
No.2 Finish-A regular bright finish produced by rolling on moderately bright rolls.
No.3 Finish-Best Bright Finish a lustrous or high gloss finish produced by rolling on highly polished rolls-Also referred to as “Mirror Finish”

Tempered Carbon Spring Steel Strip
Classified by description as follows
(A) Black Oil Tempered
(B) Scaleless Tempered
(C) Bright Tempered
(D) Tempered and Polished
(E) Tempered, Polished and Colored (blue or straw)

FINISHING TEMPERATURE - Temperature of final hot-working of a metal

FLAT WIRE - A flat Cold Rolled, prepared edge section, rectangular in shape. Generally produced from hot rolled rods or specially prepared round wire by one or more cold rolling operations. May also be produced by slitting cold rolled flat metal to desired width followed by edge dressing.

FOIL - Metal in any width but no more than about 0.005" thick

FORGING - Plastically deforming metal, usually hot, into desired shapes with compressive force, with or without dies.

FRACTURE - Surface appearance of metals when broken.

FRACTURE TEST - Nicking and breaking a bar by means of sudden impact, to enable macroscopic study of the fractured surface.

FULL HARD TEMPER - (No.1 Temper.) In low carbon sheet or strip steel, stiff and springy, not suitable for bending in any direction. It is the hardest temper obtainable by hard cold rolling. Standard hardness range is/B 90 min except .070" and heavier which has a hardness of R/B 84 min.

GAGES - Manufacturers standard numbering systems indicating decimal thicknesses or diameters.

GRAIN - An individual crystal in a polycrystalline metal or alloy, including twinned regions or subgrains if present.

GRAIN DIRECTION - Refers to grain fibber following the direction of rolling and parallel to edges of strip or steels.

GRAIN GROWTH - An increase in the average size of the grains in polycrystalline metal, usually a result of heating at elevated temperature.

GRAIN SIZE - A measure of the areas or volumes of grains in polycrystalline metal or alloy, usually expressed as an average when the individual sizes are fairly uniform. In metals containing two or more phases, the grain size refers to that of the matrix unless otherwise specified. Grain size is reported in terms of number of grains per unit area or volume, average diameter, or as a number derived from area measurements.

GROUND FLAT STOCK - Annealed and pre-ground (to close tolerances) tool steel flats in standard sizes ready for tool room use. These are three common grades; water hardening, oil hardening and air hardening quality.

HALF HARD TEMPER - (No.2 Temper) In low carbon cold-rolled strip steel, produced by cold rolling to a hardness next to, but somewhat softer than full hard temper. Standard hardness range of/B 70-85.

HARDENABILITY - In ferrous alloys, the property that determines the depth and distribution of hardness induced by quenching.

HARDENED AND TEMPERED SPRING STEEL STRIP - A medium or high carbon quality steel strip, which has been subjected to the sequence of heating, quenching and tempering.

HARDENING - Increasing hardness by suitable treatment, usually involving heating and cooling.

HARDNESS (INDENTATION) - Resistance of a metal to plastic deformation by indentation. Various hardness tests such as Brinell, Rockwell and Vickers may be used.

HEAT-AFFECTED ZONE - That potion of the base metal which was not melted during brazing, cutting or welding, but within which microstructure and physical properties were altered by the treatment.

HEAT OF STEEL - The product of a single melting operation in a furnace, starting with the charging of raw materials and ending with the tapping of molten metal and consequently identical in its characteristics.

HEAT TREATMENT - Heating and cooling a solid metal or alloy in such a way that desired structures, conditions or properties are attained. Heating for the sole purpose of hot working is excluded from the meaning of this term.

IMPACT TEST - A test for determining the behaviour of materials when subjected to high rates of loading under conditions designed to promote fracture, usually in bending, tension or torsion. The quantity measured is the energy absorbed when a single blow breaks the specimen.

IMPURITIES - Elements or compounds whose presence in a material is undesired.

INCLUSIONS - Particles of impurities (usually oxides, sulphides, silicates, etc.) that are held mechanically or are formed during the solidification or by subsequent reaction within the solid metal.

INDENTATION HARDNESS - The resistance of a material to indentation. This is the usual type of hardness test, in which a pointed or rounded indenter is pressed into a surface under a substantially static load.

INDUCTION HARDENING - A process of hardening a ferrous alloy by heating it above the transformation range by means of electrical induction, and then cooling as required.

INDUCTION HEATING - A process of heating by electrical induction.

INGOT - A casting suitable for hot working or re-melting.

INTERMEDIATE ANNEALING - An annealing treatment given to wrought metals following cold work hardening for the purpose of softening prior to further cold working.

IRON - An element that has an average atomic number of 55.85 and that always, in engineering practice, contains small but significant amounts of carbon. Thus iron-carbon alloys containing less than about 0.1% C may be referred to as irons. Alloys with higher carbon contents are always termed steels.

KILLED STEEL - Steel deoxidised with a strong deoxidising agent, such as silicon or aluminium, to reduce the oxygen content to such a level that no reaction occurs between carbon and oxygen during solidification.

LAMINATIONS - A defect appearing in sheets or strips as segregation or in layers to become divided caused by gas pockets in the ingot.

LADLE ANALYSIS - A term applied to the chemical analysis representative of a heat of steel as reported by the producer. It is determined by analyzing a test ingot sample obtained during the pouring of the steel from a ladle.

MACHINABILITY - The capacity of a material to be machined easily.

MACROETCHING - Etching of a metal surface with the objective of accentuating gross structural details, for observation by the unaided eye or at magnifications not exceeding ten diameters.

MACROGRAPH - A graphic reproduction of a prepared surface of a specimen at a magnification not exceeding ten diameters. When photographed, the reproduction is known as a photomacrograph (not a macrophotograph).

MALLEABILITY – The property that determines the ease of deforming a metal when the metal is subjected to rolling or hammering. The more malleable metals can be hammered or rolled into thin sheed more easily than others.

MANGANESE (Chemical symbol Mn) – Element No 25 of the periodic system. Atomic weight 54.93 Lustrous, reddish-white metal of hard, brittle, and therefore non-malleable, character. The metal is used in large quantities in the form of Spiegel and Ferromanganese for steel manufacture as well as in manganese and many copper base alloys. Its principal function is as an alloy in steel making (1) It is a ferrite strengthening and carbide forming element. It increases hardenability inexpensively with a tendency toward embrittlement when too high carbon and too high manganese accompany each other (2) It counteracts brittleness from sulfur.

MECHANICAL PROPERTIES – Those properties of a material that reveal the elastic and inelastic reaction when force is applied, or that involve the relationship between strress and strain, for example elasticity, tensile strength and fatigue limit. These properties have often been designated as “physical properties.”

MECHANICAL WORKING – Plastic deformation or other physical change to which metal is subjected, by rolling, hammering, drawing, etc. to change its shape, properties or structure.

MELTING RANGE – The range of temperature in which an alloy melts.

METALLOGRAPH – An optical instrument designed for both visual observation and photomicrography of prepared surfaces of opaque materials at magnificatons ranging from about 25 to 1500 diameters.

MICROSTRUCTURE – The structure of a prepared surface of a metal as revealed by a microscope at a magnification greater than ten diameters.

MILL EDGE – The edge of strip, sheet or plate in the as rolled state.

MOLYBDENUM – (Chemical symbol MO) – Element No. 42 of the periodic system; atomic weight 95.95. Hard, tough metal of grayish-white color, becoming very ductile and malleable when properly treated at high temperatures; melting point 4748 F.; boiling point about 6600 F specific gravity 10.2. Its principal functions as an alloy in steel makingÐ(1) Raises grain-coarsening temperature of austenite. (2) Deepens hardening (3) Forms abrasion-resisting particles.

NICKEL – (Chemical symbol Ni) – Element No. 28 of the periodic system; atomic weight 58.69 Silvery white, slightly magnetic metal, of medium hardness and high degree of ductility and malleability and restistance to chemical and atmospheric corrosion; melting point 2651 F.; boiling point about 5250 F., specific gravity 8.90.

NITRIDING – Process of surface hardening certain types of steel by heating in ammonia gas at about 935-1000 F., the increase in hardness beeing the result of surface nitride formation. Certain alloying constituents, principal among them being aluminium, greatly facilitate the hardening reaction. In general, the depth of the case is less than with carburizing.

NON-FERROUS METALS – Metals or alloys that are free of iron or comparatively so.

NON-METALLIC INCLUSIONS – Impurities (commonly oxides), sulfides, silicates or similar substances held in metals mechanically during solidification or formed by reactions in the solid state.

NORMALIZING – A heat treatment applied to steel. Involves heating above the critical range followed by cooling in still air. Is performed to refine the crystal structure and eliminate internal stress.

NOTCH BRITTLENESS – A measure of the susceptibility of a material to brittle fracture at locations of stress concentration. For example, in a notch tensile test a material is said to be “notch brittle” if its notch strength is less than its tensile strength; otherwise, it is said to be “notch ductile”.

NUCLEUS – (1) The first structurally stable particle capable of initiating recrystallization of a phase or the growth of an new phase, and sepatated from the matrix by an interface. (2) The heavy central core of an atom, in which most of the mass and the total positive electrical charge are concentrated.

OIL HARDENING – A process of hardening a ferrous alloy of suitable composition by heating within or above the transformation range and quenching in oil.

OIL-HARDENING STEEL – Steel adaptable to hardening by heat treatment and quenching in oil.

OLSEN (DUCTILITY) TEST – A method of measuring the ductility and drawing properties of strip or sheet metal which involves determination of the width and depth of impression. The test simulating a deep drawing operation is made by a standard steel ball under pressure continuing until the cup formed from the metal sample fractures. Readings are in thousandths of an inch.

ORE – A mineral from which metal is (or may be) extracted.

OSCILLATE WOUND – A method of even winding metal strip or wire on to a reel or mandrel wherein the strands are uniformly over-lapped. The opposite of ribbon wound.

OXIDE – Compound of oxygen with another element.

PASS – A single transfer of metal though a stand of rolls.

PATTERNED OR EMBOSSED SHEET – A sheet product on which a raised or indented pattern has been impressed on eihter one or both surfaces by the use of rolls.

PEARLITE – A eutectoid transformation product of ferrite and cemintite that ideally has a lamellar structure but that is always degenerate to some extent.

PERMANENT SET – Non-elastic or plastic, deformation of metal under strss, after passing the elastic limit.

PHOSHORUS – (Chemical symbol P) – Element No. 15 of the periodic system, atomic weight 30 g. Non-metallic element occuring in at least three allotropic forms; melting point 111 F.; boiling point 5360 F.: specific gravity 1.82. In steels it is usually undesirable with limits set in most specifications.

PHOTOMICROGRAPH – A photographic reproduction of any object magnified more than ten diameters.

PHYSICAL PROPERTIES – Properties, other than mechanical properties, that pertain to ther physical nature of a material; e.g. density, electrical conductivity, thermal expansion, reflectivity, magnetic susceptibility, etc.

PICKLING – The process of chemically removing oxides and scale from the surface of a metal by the action of water solutions of inorganic acids.

PIPE – Contraction cavity, essentially cone-like in shape, which occurs in the approximate center, at the top and reaching down into a casting; caused by the shrinkage of cast metal.

PIT – A sharp depression in the surface of the metal.

PLATE – A flat-rolled meatal product of some minimum thickness and width arbitrarily dependent on the type of metal.

PLATING – A thin coating of metal laid on another metal.

POLISHED SURFACE – The finish obtained by buffing with rouge or similar fine abrasive, resulting in a high glosss or polish.

POURING – The transfer of molten metal from the ladle into ingot molds or other types of molds; for example, in castings.

PREHEATING – A general term used to describe heating applied as a preliminary to some further thermal or mechanical treatment.

PROCESS ANNEALING – A process by which a ferrous alloy is heated to a temperature close to, but below, the lower limit of ther transformation range and is subsequently cooled. This process is applied in order to soften the alloy for further cold working.

PYROMETER – An instrument of any of various types used for measuring temperatures.

QUARTER HARD (No. 3 TEMPER) – In low carbon cols-rolled strip steel, a medium soft temper produced by a limited amount of cold rolling annealing. Standard hardness range of R/B 60-75.

QUENCHING – In the heat treating of metals, the rapid cooling of the metal by immersing the metal in oil or water.

QUENCH HARDENING – Hardening by austenitizing and then cooling at a rate such that a substantial amount of austenite is transformed to martensite.

RAGGED EDGES – Edges of Sheet or Strip, which are torn, split, cracked, ragged or burred or otherwise disfigured.

RECARBURIZING – (1) Increasing the carbon content of molten cast iron or steel by adding carbonnaceous material, high-carbon pig iron or a high-carbon alloy. (2) Carburizing a metal part to return surface carbon lost in processing.

REFRACTORY – A heat-resistant material, usually nonmetallic, which is used for furnace linings and such.

RESIDUAL ELEMENTS – Small quantities of elements uninentionally present in an alloy.

RESISTANCE WELDING – A type of welding process in which the work pieces are heated by the passage of an electric current through the contact. Such processes include spot welding, seam or line welding and percussion welding. Flash and butt welding are sometimes condidered as resistance welding processes.

RESULFURIZED STEEL – Steel to which sulfur has been added in controlled amounts after refining. The sulfur is added to improve machinability.

RIBBON WOUND – A term applied to a common method of winding strip steel layer upon layer around an arbor or mandrel.

RIMMED STEEL – Low carbon steel conaining sufficient iron oxide to produce continuous evolution of carbon monoxide during ingot solidification, resulting in a case or rim of metal virtually free of voids.

ROCKWELL HARDNESS (TEST) – A standard method for measuring the hardness of metals. The hardness is expressed as a number related to the depth of residual penetration of a steel ball or diamond cone (“brale”) after a minor load of 10 kilograms has been applied to hold the penetrator in position. This residual penetration is automatically registered on a dial when the major load is removed from the penetrator.

ROLLED EDGES – Finished edges, the final contours of which are produced by side or edging rolls. The edge contours most commonly used are square corners, rounded corners and rounded edge.

ROLLED IN SCALE – A surface defect consisting of scale partially rolled into the surface of the sheet.

ROLLER LEVELING – Passing sheet or strip metal through a series of staggered small rolls so as to flatten the metal.

ROLLING – Reducing the cross-sectional area of metal stock, or otherwise shaping metal products, through the use of rotating rolls.

ROLLING DIRECTION – The direction, in the plane of the sheet, perpendicular to the axes of the rolls during rolling.

ROLLING MILLS – Equipment used for rolling down metal to a smaller size or to a given shape employing sets of rolls the contours of which determine or fashion the product into numerous intermediate and final shapes, e.g. blooms, slabs, rails, bars, rods, sections, plates, sheets and strip.

SAE – Abbreviation for Society of Automotive Engineers – This organization has specified common and alloy steels and copper base alloys in accordance with a numerical index system allowing approximate of the composition of the metal. The last two digits always indicate the carbon content, usually within 0.05%.

SCALE – A layer of oxidation products formed on a metal at high temperature.

SCARFING – Cutting surface areas of metal objects, ordinarily by using a gas torch.

SCRAP – Material unsuitable for direct use but usable for reprocessing by remelting.

SEAM – On the surface of metal a crack that has been closed but not welded, usually produced by some defect either in casting or ind working, such as blowholes that have become oxidized or folds and laps that have been formed during working. Similar to cold shut and laminations.

SECONDS – The designation given to sheet or strip that has imperfections in moderate degree or extent.

SEGREGATION – The non-uniform distribution o alloying elements, impurities or phases.

SEMIFINISHED STEEL – Steel in the form of billets, blooms, etc., requiring further working before completion into finished steel ready for marketing.

SHEET – A flat-rolled metal product of some maximum thickness and minimum width arbitrarily dependent on the type of metal. Sheet is thinner than plate.

SILICON – (Chemical Symbol Si) – Element No. 14 of the periodic system; atomic weight 28.06. Extremely common element, the major component of all rocks and sands; its chemical reactions, however, are those of a metalloid. Used in metallurgy as a deoxidizing scavenger. Silicon is present, to some extent, in all steels.

SLAG – A product resulting from the action of a flux on the nometallic constituents of a processed ore, or on the oxidized metallic constituents that are undesirable. Usually slags consist of combinations of acid oxides, and neutral oxides are added to aid fusibility.

SLIT EDGES – The edges of sheet or strip metal resulting from cutting to width by rotary Slitters.

SLITTING – Cutting sheet or strip metal to width by rotary slitters.

SOAKING – Prolonged heating of a metal at selected temperature.

SOFT SKIN ROLLED TEMPER – (No. 4 Temper) – In low carbon-rolled stripe steel, soft and ductile. Produced by sugjecting annealed Strip to a pinch pass or skin rolling (a very light rolling). Standard hardness range of R/B 65 max.

SOLERING – Joining metals by fusion of alloys that have relatively low melting points – most commonly, lead-base or tin-base alloys, which are the soft solders. Hard solders are alloys that have silver, copper, or nickel bases and use of these alloys with melting points higher than 800 F. is generally termed brazing.

SPECTOGRAPH – An optical instrument for determining the presence or concentration of minor metallic constituents in a material by indicating the presence and intensity of specific wave lengths of radiation when the material is thermally or electrically excited.

SPEROIDIZED STRUCTURE – A microstructure consisting of a matrix containing spheroidal particles of another constituent.

SPHEROIDIZING – Heating and cooling to produce a spheroidal or globular form of carbide in steel.

SPEROIDIZING ANNEALING – A subcritical annealing treatment intended to produce spheroidization of cementite or other carbide phases.

SPOT WELDING – An electric-resistance welding process in which the fusion is limited to a small area. The pieces being welded are pressed together between a pair of water-cooled electrodes through which an electrical current is passed during a very short ineterval so that fusion occurs over a small area at the interface between the pieces.

SPRING STEEL – Stee, normally of the high-carbon or alloy type, used in the manufacture of springs, lending itself to appropriate heat treatment.

STAINLESS STEEL – Corrosion resistant steel of a wide variety, but always containing a high percentage of chromium. These are highly resistant to corrosion attack by organic acids, weak mineral acids, atmospheric oxidation, etc.

STAMPING – A term used to refer to various press forming operations in coining, embossing, blanking, and pressing.

STEEL – Iron, malleable in at least one range of temperature below its melting point without special heat treatment, substantially free from slag, and containing carbon more than about 0.05% and less than about 2.00%. Other alloying elements may be present in significant quantities, but all steels contain at least small amounts of manganese and silicon, and usually as undesirable constituents, also sulfur and phosphorus.

STRESS – Deforming force to which a body is subjected, or, the resistance which the body offers to deformation by the force.

STRESS RELIEVING – Heating to a suitable temperature, holding long enough to reduce residual stresses and then cooling slowly enough to minimize the development of new residual stresses.

STRETCHER LEVELING – A method of making metal sheet or strip dead flat by stretching.

STRIP STEEL (Cold rolled) – A flat cold rolled steel product (Other than Flat Wire) 23-15/16" and narrower; under .250" in thickness, which has been cold reduced to desired decimal thickness and temper on single stand, single stand reversing, or tandem cold mills in coil form from coiled hot rolled pickled strip steel.

SULFUR (Chemical Symbol S.) – Element No.16 of the periodic system; atomic weight 32 06. Non-metal occurring in a number of alltropic modifications, the most common being a pale-yellow brittle Solid. In steel most commonly encountered as an undesired contaminant. However, it is frequently deliberately added to cutting stcok, to increase machinability.

SURFACE HARDENING – A generic term covering several processes applicable to a suitable ferrous alloy that produce, by quench hardening only, a surface layer that is harder or more wear resistant than the core. There is no significant alteration of the chemical composition of the surface layer. The processes commonly used are inducion hardening, flame hardening and shell hardening. Use of the applicable specific process name is preferred.

TANDEM MILL – Arrangement of rolling mills, in direct line, allowing the metal to pass from one set of rolls into the next.

TELESCOPING – Transverse slipping of successive layers of a coil so that the edge of the coil is conical rather than flat.

TEMPER – The state of or condition of a metal as to its hardness or toughness produced by either termal treatment or heat treatment and quench or cold working or a combination of same in order to bring the metal to its specified consistency.

SHEET STEEL (Low Carbon Cold Rolled) – Temper Classifications.

Temper	Rockwell
Full Hard (.070 & Thicker)	B 84 min.
Full Hard (.069 & Thinner)	B 90 min.
Half Hard	Approx. R/B 70/85
Quarter Hard	Approx. R/B 60/75
Soft (Commercial Quality)	Approx. R/B 65 max.
Drawing Quality	Approx. R/B 55 max.

STRIP STEEL (Low Carbon Rolled) – Temper Classifications.

Temper	Rockwell	Mean Tensile
#1 Full Hard (.070 & Thicker)	B 84 min.	80,000
#1 Full Hard (.069 & Thinner)	B 90 min.	80,000
#2 Half Hard	B 70 – 85	64,000
#3 Quarter Hard	B 60 – 70	54,000
#4 Skin Rolled	B 65 max.	48,000
#5 Dead Soft	B 55 max.	

TEMPERED and POLISHED SPRING STEEL STRIP - .90/1.03 carbon range (Also known as clock spring steel.) – This product, while similar to general description under heading of Tempered Spring Steel Strip, is manufactured and processed with great and extreme care exercised in each step of its production. Manufactured from carbon range of .90/1.03 with Rockwell range C 48/51.

TEPMERED SPRING STEEL STRIP – Any medium or high carbon (excluding clock spring) strip steel of spring quality, which has been hardened and tempered to meet specifications. Where specification calls for blue or straw color, same is accomplished by passing through heat prepared at proper temperature depending on color required. Blue is developed at approximately 600 F.

TEMPERING – A process of re-heating quench-hardened or normalized steel to a temperature below the transformation range and then cooling at any rate desired. The primary purpose of tempering is to impart a degree of plasticity of toughness to the steel to alleviate the brittleness of its martensite.

TEMPER ROLLING – Light cold rolling of sheet steel. The operation is performed to improve flatness, to minimize the formation of stretcher strains, and to obtain a specified hardness or temper.

TENSILE STRENGTH – Breaking strength of a material when subjected to a tensile (stretching) force usually measured by placing a standard test piece in the jaws of a tensile machine, gradually separating the jaws, and measuring the stretching force necessary to break the test piece. Tensile strength is commonly expressed as pounds (or tons) per square inch of original cross section.

THICKNESS GAGE OR FEELER STOCK – A hardened and tempered, edged, ground, and polished thin section, high carbon strip steel. Usually 1/2“ in width and in thicknesses from .001“ to .050“ manufactured to extremely close tolerances. It is used primarily for determining the measurement of openings by tool and die makers, machinists, and automoblie technicians.

TOLERANCE LIMIT – The permissible deviation from the desired value.

TOOL STEEL – Any high carbon or alloy steel capable of being suitably tempered for use in the manufactre of tools.

TOUGHNESS – Capacity of a metal to absorb energy and deform plastically before fracturing.

TRACE – Extremely small quantity of an element, usually too small to determine quantitatively.

TUMBLING – Cleaning articles by rotating them in a cylinder with cleaning materials.

VICKERS HARDNESS - Standard method for measuring the hardness of metals, particularly those with extremely hard surfaces; the surface is subjected to a standard pressure for a standard length of time by means of a pyramid-shaped diamond. The diagonal of the resulting indention is measured under a microscope and the Vickers Hardness value read from a conversion table.

WATER HARDENING - Process of hardening high carbon steels by quenching in water or brine, after heating.

WAVY - Not flat. A slight wave following the direction of rolling and beyond the standard limitation for flatness.

WELDING - Joining two or more pieces of material by applying heat or pressure, or both, with or without filler metal, to produce a localized union through fusion or recrystallization across the interface.

WORK HARDENING - Hardness produced by cold working.

WORKABILITY - The characteristic or group of characteristics that determines the ease of forming a metal into desired shapes.

WROUGHT IRON - An iron produced by direct reduction of ore or by refining molten cast iron under conditions where a pasty mass of solid iron with included stag is produced. The iron has a low carbon content.

YIELD POINT - The load per unit of original cross section at which, in soft steel, a marked increase in deformation occurs without increase in load.

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