



HARKUS STEEL

○ STAINLESS ○ MILD ○ ALLIED PRODUCTS



STAINLESS STEEL PRODUCTS

www.harkus.co.za

THE COMPANY

Welcome to Harkus Steel.

Your partner in steel, engineering and its associated industries.

Our aim to fulfil the needs of our partners with exceptional service and competitive pricing thus ensuring both of our success.

All of our products are sourced both locally and internationally to ensure our partners have all the options available to them.

We are privately owned and managed. The shareholders are directly involved in the day to day activities of the business. This includes the full value chain encompassing material sourcing, supply chain management, logistical solutions and manipulation of industrial products centred around steel and its alloys.

This makes us substantially more malleable and allows us to conform to your needs.

Harkus Steel have a proven track record (references can be provided on request).

We aim for our partners to see steel as synonymous with Harkus, the **NO.1 PROVIDER** of quality product and excellent service.

"Coming together is a beginning. Keeping together is progress. Working together is success." - Henry Ford

HISTORY

Like all great stories, we started with humble beginnings. Just a man and his dreams, but what dreams they were. Some called it crazy, others said it was impossible, but dear partner, we call it ambition.

We have grown from a small inner city operation to an entity with a reach that allows us to service the entire SADC region. Dear partner, this is only the beginning and we hope you undertake this journey with us.

"The biggest risk of all is not taking one." - Mellody Hobson

SERVICE EXCELLENCE

As the saying goes: "The difficult we do immediately, the impossible takes a little longer"

Engineering is all about deadlines. We know this, you know this.

Facility downtimes and penalties can run into millions. Very often these are matters beyond your control. It is important to have partners that understand the risks in your business. Our duty as your humble partner is to recognize your needs and see to it that they are met. Our fleet of vehicles and logistical partners help us see to that. We make use of road, rail, sea and air freight facilities to meet and hopefully exceed your needs, dear partner allow us to meet your needs. We are on time, every time.

"The line between disorder and order lies in logistics". - Sun Tzu

COMPETITIVE PRICE

There are many factors that affect pricing. We endeavour to always provide our partners with the best possible pricing. It is imperative for us to ensure the success of our partners for we are nothing without them.

We pride ourselves in keeping abreast of market trends and along with our global supply chain enable us to strategically position ourselves to offer very competitive pricing, dear partner, your best interest is our best interest.

"Price is what you pay. Value is what you get." - Warren Buffet

QUALITY ASSURANCE

All of our partner factories/suppliers conform to ISO 9001 – 9002 quality standards. All material confirm to international ASTM and AISI quality standards. Test certificates can be provided with all material. 3rd party inspection can be provided (upon request) for all goods and services. We have years of technical experience. Most importantly all products and services come with a Harkus Steel quality guarantee. Dear partner we believe that integrity cannot be bought only earned.

"An investment in knowledge pays the best interest." — Benjamin Franklin

EMPOWERMENT

As a level 1 BEE Rated vendor, 135% of your purchases with Harkus will be classed as a BEE spend.

This in turn might assist you in improving your BEE rating which will lead to significant benefits.

We believe empowerment must add value, therefore we are committed to empowering and developing our employees and supply chain. Dear partner, for you, for us and for our nation.

"We cannot be separated in interest or divided in purpose. We stand together until the end". – Woodrow Wilson

MARKETS



Healthcare



Fabrication - Light and Heavy



Alcohol and Beverage



Catering



Food



Sugar



Pharmaceutical



Water



Mining



Fish Processing



Power Generation



Logistics and Transport



Paper and Pulp



Oil and Gas



Chemicals + Petrochemicals



Architectural, Building and Construction



CUTTING

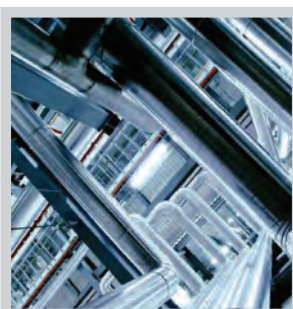
Flame, Plasma, Water Jet, Guillotin & Profile

ENGINEERING

Threading, Welding, Polishing, Drilling, Tube Manipulation, Rolling, Bending and Industrial Art Design

FINISHING

Cleaning and Polishing

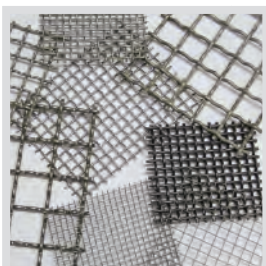
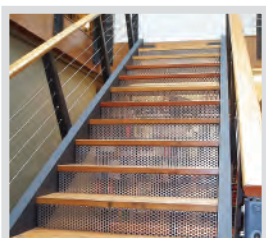




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CONTENTS

	PAGES
1. FLAT PRODUCTS	
Sheets & Plates	6
Decorative Sheet & Coil	7
2. LONG PRODUCTS / SECTIONS	
Ornamental Tube	8
Stainless Steel Bars	9
Hollow Bar	10
3. PIPING SYSTEM	
Nominal Bore Pipes	11
Welded Equal Fittings	12
Welded Reduced Fittings	13 - 14
Seamless Equal Fittings	15
Seamless Reduced Fittings	16 - 17
Equal BSP Fittings	18
Reduced BSP Fittings	19
NPT Screwed Fittings	20
NPT Socket Weld Fittings	21
4. BALL VALVES	
1 Piece Ball Valves	22
3 Piece Ball Valves	23
5. FLANGES	
Table Flanges	24 - 28
Weld Neck & Blind Flanges	29 - 30
Forged Flanges: Ring Joint Facings	31 - 35
Large & Small Facings	36 - 38
6. COLLARS	
Pressed and Welded Collars	39
7. MESH	
Expanded Mesh & Razor Wire	40
8. INDUSTRIAL PLATFORM SYSTEMS	
Handrail Systems	41 - 44
Gratings	45 - 47
Stair Treads	48
9. TECHNICAL INFORMATION	
Conversion Factors	49
Corrosion Resistance Data	50 - 53
Equivalent of Standard Wire Gauges / Useful Conversion Formulae	54
Fractions of Inches / Theoretical Mass Calculation	55
Hardness Comparison Table	56
Nominal Composition of Stainless Steel	57 - 60
Pipe Working Pressures	61



- Density factors used for weight calculations.
- Austenitics & Ferritics over 3mm use a density factor of 8.2kg/m²
- Less than 3mm thick Austenitics (Such as Grades 304 and 316) 8.07kg/m²
- Ferritics (Grade 430 and 3CR12) 8Kg/m²



Length(m) x Width (m) x Thickness (mm) x Density Factor

SIZE (mm)	THICKNESS & KG / SHEET									
	304/316 AUSTENITIC									
	0.5	0.7	0.9	1	1.2	1.5	1.6	2	2.5	3
2000 x 1000	8.07	11.03	14.53	-	19.37	24.21	25.82	32.28	40.35	48.42
2500 x 1250	12.61	17.65	22.7	-	30.26	37.83	40.35	50.44	43.05	75.66
3000 x 1500	-	-	-	-	43.58	54.47	58.1	72.63	90.79	108.95
6000 x 1500	-	-	-	-	-	-	-	-	-	216
6000 x 2500	-	-	-	-	-	-	-	-	-	290.52

MATERIAL FINISHES: BA/2B/NO.4

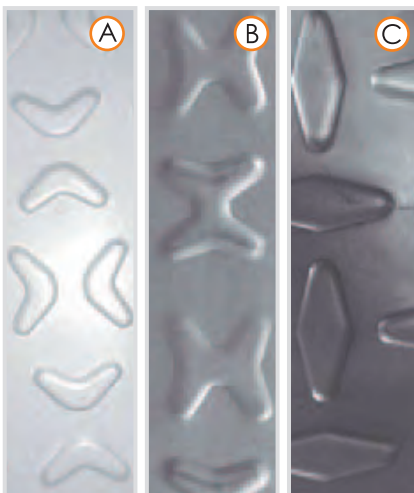
SIZE (mm)	THICKNESS & KG / SHEET									
	430 / 3R12 / 444 FERRITIC									
	0.5	0.7	0.9	1	1.2	1.5	1.6	2	2.5	3
2000 x 1000	8	11.2	14.4	-	19.2	24	25.6	32	40	49.20
2500 x 1250	12.5	17.5	22.5	25	30	37.5	40	50	62.5	76.88
3000 x 1500	-	-	-	-	43.2	54	57.6	72	90	110.7
6000 x 1500	-	-	-	-	-	-	-	-	-	-
6000 x 2500	-	-	-	-	-	-	-	-	-	-

MATERIAL FINISHES: BA/2B/NO.4

SIZE (mm)	THICKNESS & KG / PLATE										
	304/316 / 3CR12 / LDX2101/904L AUSTENITIC & FERRITIC										
SIZE (mm)	4.5	6	8	10	12	16	20	25	30	40	50
2500 x 1250	115.31	153.75	205	256.25	307.5	410	512.5	640.63	768.75	1025	1281.25
3000 x 1500	166.05	221.4	295.2	369	442.8	590.4	738	922.5	1107	1476	1845
6000 x 1500	332.1	442.8	590.4	738	885.6	-	-	-	-	-	-
6000 x 2500	442.8	590.4	787.2	984	1180.8	-	-	-	-	-	-

MATERIAL FINISHES: NO.1

TREAD PLATES AVAILABLE IN 304 / 316 / 3CR12



(A) BOOMERANG PATTERN

LENGTH (MM)	WIDTH (MM)	THICKNESS (MM)
2500	1250	2
3000	1250	2
6000	1250	2
2500	1250	3
3000	1250	3
6000	1250	3
2500	1250	4.5
3000	1250	4.5
6000	1250	4.5

(B) BUTTERFLY PATTERN

LENGTH (MM)	WIDTH (MM)	THICKNESS (MM)
2500	1250	4.5
3000	1250	4.5
6000	1250	4.5

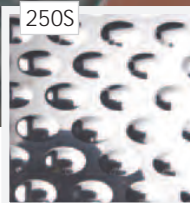
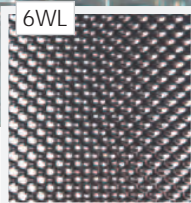
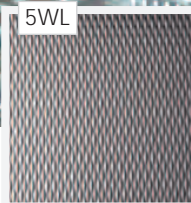
(C) DIAMOND PATTERN

LENGTH (MM)	WIDTH (MM)	THICKNESS (MM)
2500	1250	3
2500	1250	4.5
2500	1250	6

DECORATIVE SHEETS & COILS



SHEET SIZES (mm)	5WL / 6WL	RING POLISH	NO. 4 (SATIN)	DIMPLE RANGE
2000 x 1000	Y	Y	Y	Y
2500 x 1250	Y	Y	Y	Y
3000 x 1250	Y	Y	Y	Y
3000 x 1500	-	Y	Y	N
THICKNESS				
0.5	Y	Y	ON REQUEST	Y
0.7	Y	Y	Y	Y
0.9	Y	Y	Y	N
1.2	Y	Y	Y	N
1.5	-	Y	Y	N
2	-	Y	Y	N



THICKNESS & KG / RUNNING MTR							
SIZE	304/316 AUSTENITIC						
mm	0.5	0.7	0.9	1.2	1.5	2	3
925	-	-	-	-	-	-	-
1000	-	-	-	9.5	-	-	-
1250	5.04	7.06	9.08	12.1	15.13	20.18	30.26
1500	-	-	-	-	-	-	36.32

SURFACE FINISHES: 2B/NO.4 / BA

THICKNESS & KG / RUNNING MTR							
SIZE	430 FERRITIC						
mm	0.5	0.7	0.9	1.2	1.5	2	3
925	-	5.18	-	-	-	-	-
1000	-	-	-	9.5	-	-	-
1250	5	7	9	12.1	15	-	-
1500	6	8.4	10.8	-	18	-	-

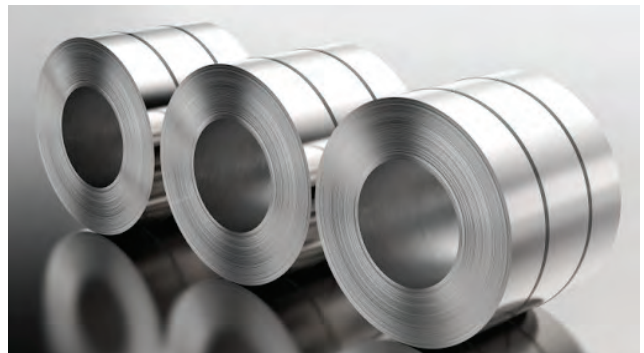
SURFACE FINISHES: 2B/BA/NO.4

Length(m) x Width (m) x Thickness (mm) x Density Factor

STAINLESS STEEL



- Density factors used for weight calculations.
- Austenitics & Ferritics over 3mm use a density factor of 8.2kg/m²
- Less than 3mm thick Austenitics (Such as Grades 304 and 316) 8.07kg/m²
- Ferritics (Grade 430 and 3CR12) 8Kg/m²



- COIL NOT PVC COATED
- NORMALLY SUPPLIED WITH PAPER INTERLEAVED

TUBING



ROUND TUBE

DIN 2463 D3T3/ ASTM A554

SIZE mm	WEIGHT: kg/m		
	1.2mm	1.5mm	2mm
12,77	0,34	0,42	-
15,88	0,44	0,54	-
19,05	0,53	0,65	-
25,4	0,72	0,89	1,16
31,75	0,91	1,13	1,48
38,1	1,1	1,36	1,79
41,27	1,19	1,48	-
50,8	1,48	1,83	2,42
63,5	1,86	2,31	3,05
76,2	2,23	2,78	3,68
88,9	-	3,22	-
101,6	-	4,02	4,99

GRADE AVAILABLE 304 / 316
FINISH 180 & 600 GRIT

SQUARE TUBE

DIN 17455 D3T3/ ASTM A554

SIZE mm	WEIGHT: kg/m		
	1.2mm	1.5mm	2mm
20 x 20	0.73	0.9	-
25 x 25	0.93	1.15	1,5
30 x 30	1.11	1.37	1,81
40 x 40	1.49	1.85	2,44
50 x 50	-	2.33	3,08
60 x 60	-	2.92	3,86
80 x 80	-	-	5,15
100 x 100	-	-	6,44

GRADE AVAILABLE 304 / 316
FINISH 180 & 600 GRIT

RECTANGULAR TUBE

DIN 2395 /ASTM A554

SIZE mm	WEIGHT: kg/m		
	1.2mm	1.5mm	2mm
40 x 20	-	1,37	-
50 x 25	-	1,71	-
60 x 40	-	2,32	3,08
80 x 40	-	2,77	3,86
100 x 50	-	-	4,84

GRADE AVAILABLE 304 / 316
FINISH 180 & 600 GRIT



ROUND BAR

ASME/ASTM SA/A 182 from 155mm and bigger
ASME/ASTM SA/A276 up to 150mm

SQUARE BAR

ASTM 276 and 479

HEX BAR

ASTM A276 and A582

MATERIAL GRADE:
304/316

SIZE mm	KG/M		
	ROUND	SQUARE	HEX
3	0,057	-	-
4	0,099	-	-
5	0,158	-	-
5,2	0,172	-	-
6	0,227	0,29	0,38
6,1	0,235	-	-
6,35	0,254	-	-
6,5	0,267	-	-
8	0,395	0,515	0,44
8,9	0,5	-	-
10	0,617	0,804	0,7
11	-	-	0,84
12	0,888	0,21	1
12,7	1,018	-	-
13	1,066	-	1,18
14	1,208	-	1,36
15,88	1,578	-	-
16	1,615	2,06	-
17	-	-	1,96
19	-	-	2,51
20	2,524	3,22	-
22	-	-	3,37
24	-	-	3,92
25	3,944	5,03	-
26	4,266	-	-
27	-	-	4,96
28	4,95	-	-
30	5,679	7,24	6,27
32	6,461	-	7,13
35	7,73	9,85	-
36	7,99	-	8,81
38	8,9	-	10,05
40	9,87	12,86	-
41	-	-	11,7
45	12,78	-	14,1
48	14,2	-	-

SIZE mm	KG/M		
	ROUND	SQUARE	HEX
50	15,78	19,63	17,41
50,8	16,28	-	-
55	18,65	-	21,06
60	22,72	28,94	25,07
65	26,66	-	29,42
70	30,92	-	-
75	34,68	-	-
76,2	35,6	-	-
80	40,38	51,46	-
85	45,59	-	-
90	51,11	-	-
95	56,95	-	-
100	63,1	82,4	-
101,6	63,52	-	-
105	69,57	-	-
110	76,35	-	-
115	83,45	-	-
120	88,78	-	-
125	98,59	-	-
130	106,54	-	-
135	114,99	-	-
140	123,68	-	-
145	132,67	-	-
155	151,6	-	-
160	161,54	-	-
165	171,79	-	-
180	196,70	-	-
185	215,96	-	-
195	239,93	-	-
200	252,4	-	-
220	305,4	-	-
230	333,8	-	-
250	401,4	-	-
290	530,68	-	-
300	578,10	-	-

MATERIAL GRADE:
304/316/304L/316L

ASTM A484/A484
M-06-Hot Rolled,
Annealed & Pickled

SIZE mm	KG/M	
	FLATBAR	ANGLE IRON
20 x 3	0,48	1,2
25 x 3	0,603	-
25 x 5	1,005	2
25 x 10	2,01	-
30 x 3	0,72	1,45
30 x 5	1,21	2,4
40 x 3	0,96	1,9
40 x 5	1,61	3,2
40 x 6	1,93	3,86
40 x 10	3,2	-
50 x 3	1,21	2,41
50 x 5	2,01	3,93
50 x 6	2,41	4,82
50 x 8	3,22	-
50 x 10	4,02	-
65 x 6	3,135	6,27
65 x 10	5,226	-
75 x 6	3,62	7,3
75 x 10	6,03	-
100 x 6	4,82	-
100 x 10	8,04	-

Round Bar material grades available on request
303/431(EN57)



STAINLESS STEEL HOLLOW BAR

O.D mm	I.D mm	DIMENSIONS AFTER ROUGH MACHINING				AVERAGE WEIGHT KG/M
		CHUCKED TRUE TO THE O.D		CHUCKED TRUE TO THE I.D		
		MAX O.D mm	MAX I.D mm	MAX O.D mm	MAX I.D mm	
32	20	31.0	22.0	30.0	21.0	4.23
	16	35.0	18.0	30.0	17.0	5.11
36	25	35.0	27.0	34.0	26.0	4.58
	20	35.0	22.0	34.0	21.0	5.96
	16	35.0	18.5	33.5	17.0	6.84
40	28	39.0	30.0	38.0	29.0	5.63
	25	39.0	27.0	38.0	26.0	6.51
	20	39.0	22.5	37.5	21.0	7.89
45	32	44.0	34.0	43.0	33.0	6.75
	28	44.0	30.0	42.5	29.0	8.23
	20	44.0	22.5	42.5	21.0	10.6
50	36	49.0	38.0	48.0	37.0	8.08
	32	49.0	34.5	47.5	33.0	9.75
	25	49.0	27.5	47.5	26.0	12.2
56	40	55.0	42.0	54.0	41.0	10.3
	36	55.0	38.1	53.9	37.0	12.1
	28	55.0	30.5	53.5	29.0	15.3
63	50	62.0	52.0	61.0	51.0	10.0
	40	62.0	42.5	60.5	41.0	15.6
	36	62.0	38.5	60.5	37.0	17.5
	32	62.0	34.5	60.5	33.0	19.1
71	56	69.5	58.0	69.0	57.0	13.0
	45	69.5	47.5	68.5	46.0	19.8
	40	69.5	42.5	68.5	41.0	22.4
	36	69.5	38.5	68.5	37.0	24.1
75	40	73.5	42.5	72.0	41.0	26.2
80	63	78.5	65.5	77.5	64.0	16.5
	50	78.5	52.5	77.0	51.0	25.5
	45	78.5	47.5	77.0	46.0	28.5
	40	78.5	43.0	77.0	41.0	31.1
85	45	83.5	48.0	82.0	46.0	33.7
90	71	88.6	73.1	87.6	72.1	20.8
	63	88.6	65.3	87.3	64.0	27.1
	56	88.6	58.5	87.1	57.0	32.3
	50	88.6	52.6	87.0	51.0	36.1
95	50	93.5	52.7	91.8	51.0	42.1
100	80	98.5	82.3	97.4	81.2	24.4
	71	98.5	73.4	97.2	72.1	32.7
	63	98.5	65.5	97.0	54.0	39.2
	56	98.5	58.7	96.8	57.0	42.3
106	80	104.0	82.5	103.0	81.5	32.5
	71	104.0	73.5	103.1	72.1	40.6
	63	104.0	66.0	102.5	64.0	47.4
	56	104.0	59.0	102.5	57.0	52.5

O.D mm	I.D mm	DIMENSIONS AFTER ROUGH MACHINING				AVERAGE WEIGHT KG/M
		CHUCKED TRUE TO THE O.D		CHUCKED TRUE TO THE I.D		
		MAX O.D mm	MAX I.D mm	MAX O.D mm	MAX I.D mm	
112	90	110.0	93.0	109.0	91.5	30.4
	80	110.0	83.0	108.5	81.5	40.8
	71	110.0	74.0	108.5	72.5	49.2
	63	110.0	66.0	108.0	64.0	55.8
118	90	116.0	93.0	114.5	91.5	39.2
	80	116.0	83.0	114.5	81.5	49.7
	71	116.0	74.0	114.0	72.5	57.9
	63	116.0	66.0	114.0	64.0	64.6
125	100	123.0	103.0	121.9	101.5	38.4
	90	123.0	93.0	121.5	91.5	49.8
	80	123.0	83.0	121.4	81.5	60.5
	71	123.0	74.0	121.2	72.1	68.5
132	106	130.0	109.0	128.8	107.6	42.0
	90	130.0	93.0	128.4	91.5	61.1
	80	130.0	83.1	128.0	81.2	71.5
	71	130.0	74.2	127.9	72.1	79.7
140	112	137.5	115.0	136.5	113.7	48.2
	100	137.5	103.5	136.0	101.5	63.3
	90	137.5	93.5	136.0	91.5	74.9
	80	137.5	88.3	135.5	81.5	85.2
150	125	147.5	128.5	146.5	127.0	47.8
	106	147.5	109.5	146.0	107.6	74.2
	95	147.5	98.5	145.5	96.5	87.7
	80	147.5	84.0	145.5	81.5	103.3
160	132	157.5	135.5	156.3	134.0	56.2
	122	157.5	125.5	156.0	123.8	71.6
	112	157.5	115.5	155.8	113.7	85.8



DN (mm)	NOMINAL DIAMETER (INCH)	OUTSIDE DIAMETER (OD) (MM)	ASME B36.19 (WELDED)						ASME B36.10 (SEAMLESS)					
			NOMINAL THICKNESS / WALL THICKNESS AND WEIGHT /MT											
			10 S		SCHD. 40 S		SCHD. 80 S		10		40		80	
			WT (MM)	KG/M	WT (MM)	KG/M	WT (MM)	KG/M	WT (MM)	KG/M	WT (MM)	KG/M	WT (MM)	KG/M
6	1/8"	10.29	1.24	0.281	1.73	0.371	2.41	0.476	1.24	0.281	1.73	0.371	2.41	0.476
8	1/4"	13.72	1.65	0.499	2.24	0.644	3.02	0.809	1.65	0.499	2.24	0.644	3.02	0.809
10	3/8"	17.15	1.65	0.64	2.31	0.858	3.2	1.1	1.65	0.64	2.31	0.858	3.2	1.118
15	1/2"	21.34	2.11	1.016	2.77	1.26	3.73	1.62	2.11	1.016	2.77	1.26	3.73	1.62
20	3/4"	26.67	2.11	1.298	2.87	1.71	3.91	2.19	2.11	1.298	2.87	1.71	3.91	2.19
25	1"	33.4	2.77	2.125	3.38	2.54	4.55	3.23	2.77	2.125	3.38	2.5	4.55	3.23
32	1 1/4"	42.16	2.77	2.76	3.56	3.45	4.85	4.46	2.77	2.76	3.56	3.38	4.85	4.46
40	1 1/2"	48.26	2.77	3.155	3.68	4.11	5.08	5.4	2.77	3.155	3.68	4.05	5.08	5.4
50	2"	60.33	2.77	3.992	3.91	5.29	5.54	7.47	2.77	3.992	3.91	5.43	5.54	7.47
65	2 1/2"	73.03	3.05	5.345	5.16	8.8	7.01	11.4	3.05	5.345	5.16	8.62	7.01	11.4
80	3"	88.9	3.05	6.557	5.49	11.48	7.62	15.25	3.05	6.557	5.49	11.28	7.62	15.25
100	4"	114.3	3.05	8.496	6.02	16.34	8.56	22.29	3.05	8.496	6.02	16.06	8.56	22.29
125	5"	141.3	3.4	11.74	6.55	22.12	9.52	30.92	3.4	11.74	6.55	21.76	9.52	30.92
150	6"	168.28	3.4	14.037	7.11	28.72	10.97	42.52	3.4	14.037	7.11	28.23	10.97	42.52
200	8"	219.08	3.76	20.334	8.18	43.27	12.7	64.57	3.76	20.334	8.18	42.49	12.7	64.57
250	10"	273.05	4.19	28.24	9.27	61.3	12.7	81.46	4.19	28.24	9.27	60.24	15.09	95.84
300	12"	323.85	4.57	36.58	9.53	75.04	12.7	97.36	4.57	36.58	10.31	79.71	17.48	131.81
350	14"	355.6	4.78	42.102	9.53	82.58	12.7	109.04	6.35	54.63	11.13	94.31	19.05	157.9
400	16"	406.4	4.78	48.07	9.53	94.7	12.7	125.2	6.35	62.58	12.7	123.18	21.44	203.26
450	18"	457.2	4.78	54.15	9.53	106.83	12.7	141.35	6.35	70.5	14.27	155.9	23.83	254.25
500	20"	508	5.54	69.766	9.53	118.93	12.7	157.51	6.35	78.47	15.09	183.14	26.19	310.91
550	22"	558.8	5.54	76.75	9.53	131.07	12.7	173.66	6.35	86.42	15.87	213.8	28.57	273.27
600	24"	609.6	6.35	96.215	9.53	143.2	12.7	181.82	6.35	96.215	17.48	254.74	30.96	441.3
650	26"	660.4	-	-	-	-	-	-	7.92	127.58	-	-	-	-
700	28"	711	-	-	-	-	-	-	7.92	137.52	-	-	-	-
750	30"	762	7.92	147.45	9.53	-	12.7	-	7.92	147.45	-	-	-	-
800	32"	812.8	-	-	-	-	-	-	7.92	157.39	17.48	242.17	-	-
850	34"	863.6	-	-	-	-	-	-	7.92	167.32	17.48	364.01	-	-
900	36"	914.4	-	-	-	-	-	-	7.92	177.26	17.48	420.21	-	-

For fitting sizes 36" and larger, please call us for further assistance.

WELDED EQUAL BUTTWELD



		EQUAL BUTTWELD FITTINGS DIMENSIONS (mm) & WEIGHT (kg's)																			ASME B36.19						
DN (mm)	NOMINAL DIAMETER (INCH)	45° ELBOWS				90° ELBOWS				EQUAL TEES						BUTTWELD END CAPS				STUB ENDS							
		CENTRE TO END (A)	SCH.10.S	STD SCH.40S	XS SCH.80S	CENTRE TO END (A)	SCH.10S	STD SCH.40S	XS SCH.80S	W	SCH.10S	STD SCH.40S	XS SCH.80S	LENGTH (E)	SCH.10S	STD SCH.40S	XS SCH.80S	DIA OF LAP	LONG ASME	SHORT ASME & MSS	MSS TYPE A (MAX) & ASME	MSS TYPE B (MAX)	SCH 10	STD SCH 40S	XS SCH 80S		
6	1/8"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
8	1/4"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
10	3/8"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
15	1/2"	15.88	0.03	0.039	0.05	38.10	0.061	0.078	0.100	25.4	25.4	0.13	0.16	0.22	25.4	0.04	0.046	0.045	34.93	76.2	50.8	3.3	0.76	0.062	0.079	0.129	
20	3/4"	26.67	19	0.039	0.052	0.078	0.078	0.103	0.14	28.7	28.7	0.16	0.2	0.294	25.4	0.052	0.059	0.086	42.88	76.2	50.8	3.3	0.76	0.086	0.101	0.17	
25	1"	33.4	22.22	0.064	0.077	0.1	38.10	0.128	0.154	0.204	38.1	0.31	0.34	0.399	38.1	0.09	0.109	1.13	50.8	101.6	50.8	3.3	0.76	0.14	0.16	0.24	
32	1 1/4"	41.16	25.4	0.103	0.13	0.177	47.75	0.206	0.260	0.349	47.75	47.75	0.51	0.59	0.8	38.1	0.113	0.171	0.222	63.5	101.6	50.8	4.83	0.76	0.178	0.263	0.349
40	1 1/2"	48.26	28.45	0.142	0.184	0.254	57.15	0.283	0.368	0.507	57.15	57.15	0.76	0.91	1.26	38.1	0.14	0.234	0.344	73.02	101.6	50.8	6.35	0.76	0.213	0.376	0.458
50	2"	60.33	35.05	0.239	0.326	0.471	76.20	0.478	0.652	0.9	63.5	63.5	1.24	1.59	2.26	38.1	0.17	0.27	0.344	92.07	152.4	63.5	7.87	0.76	0.376	0.471	0.743
65	2 1/2"	73.03	44.45	0.406	0.683	0.897	95.25	0.812	1.37	1.79	76.2	76.2	1.77	2.72	3.7	38.1	0.242	0.42	0.512	104.77	152.4	63.5	7.87	0.76	0.448	0.797	1.06
80	3"	88.9	50.8	0.571	1.02	1.44	114.30	1.14	2.04	2.87	85.85	85.85	1.94	3.18	4.42	50.8	0.4	0.69	0.84	127	152.4	63.5	9.65	0.76	0.574	1.133	1.508
100	4"	114.3	63.5	0.985	1.92	2.81	152.40	1.97	3.84	5.45	104.9	104.9	3.05	5.45	7.74	64	0.68	1.22	1.61	157.18	152.4	76.2	11.18	0.76	0.87	1.68	2.56
125	5"	141.3	79.25	1.71	3.24	4.85	190.50	3.42	6.48	9.69	123.95	123.9	5.43	9.53	13.8	76	1.02	1.91	2.55	185.75	203.2	76.2	11.18	1.52	1.237	2.28	3.601
150	6"	168.3	95.25	2.43	4.97	8.02	228.60	4.87	9.94	15.99	143	143	8.18	15.4	23.8	89	1.42	3.23	4.24	215.9	203.2	88.9	12.7	1.52	1.95	3.37	5.57
200	8"	219.1	127	5.01	10.1	16.22	304.08	10.00	20.10	31.7	177.8	177.8	12.7	25	38.7	102	2.49	5.67	7.76	269.88	203.2	101.6	12.7	1.52	2.65	5.67	10.12
250	10"	273.1	158.75	8.3	17.7	25.37	381.00	15.50	37	49.83	215.9	215.9	16	26	52.9	127	4.9	9.7	12.3	323.88	254	127	12.7	1.52	4.38	9.55	13.95
300	12"	323.9	190.5	12.5	28.1	36.8	457.20	25.90	53	72.83	254	254	27.86	39	72.48	152	6.53	13.1	16.6	381	254	152.4	12.7	1.52	6.74	13.8	19.93
350	14"	355.6	222.25	17.3	32.93	47.2	533.40	33.60	69	91.6	279.4	279.4	41	74.21	99.78	165	8.16	15.9	21.11	412.75	304.8	152.4	12.7	1.52	7.75	15.46	20.62
400	16"	406.4	254	22.7	43.31	62	609.60	43.90	91	121	304.8	304.8	48.7	88.56	114.23	178	14.5	22	29.48	469.9	304.8	152.4	12.7	1.52	9	17.98	23.98
450	18"	457.2	285.75	28.7	54.99	79	685.80	56	116	153	342.9	342.9	62	112.33	150	203	18	27	35.92	533.4	304.8	152.4	12.7	1.52	10.5	21	28
500	20"	508	317.5	41.1	68.13	97.2	762.00	79	140	188	381	381	99	155	207	229	27	34	40.21	584.2	304.8	152.4	12.7	1.52	13.54	23.3	31.07
550	22"	558.8	342.9	49.8	81.13	118	838.20	96.40	170	229	419.1	419.1	120	188	250	-	-	-	-	641.35	304.8	152.4	12.7	1.52	16.22	25.86	34
600	24"	609.6	381	71.3	98.57	141	914.40	138	206	274	431.8	431.8	175	240	319	267	34.5	44.5	61.23	692.15	304.8	152.4	12.7	1.52	18.94	28.41	37.88
650	26"	660.4	406.4	104	114.11	166	990.60	201	242	322	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
700	28"	711	438.15	118	132.73	190	1066.80	229	275	369	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
750	30"	762	469.9	139	152.75	218	1143	269	324	423	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
800	32"	812.8	501.65	149	156.24	240	1219.20	290	349.53	466	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
850	34"	863.6	533.4	169	196.96	272	1295.40	328	395.24	528	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
900	36"	914.4	565.15	189	221.2	304	1371.60	367	443.71	590	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

ASME B36.19

DN	NOMINAL DIAMETER (INCH)	UNEQUAL BUTTWELD FITTINGS DIMENSIONS (mm) & WEIGHT (kg's)											
		OUTSIDE DIAMETER			CONCENTRIC & ECCENTRIC				REDUCING TEES				
		OD1	OD2	OUTLET	LENGTH H	SCH. 10.S	STD SCH. 40S	XS. SCH. 80S	CENTRE TO END (C)	CENTRE TO END (M)	SCH. 10.S	STD SCH. 40S	XS. SCH. 80S
6	1/8"	-	-	-	-	-	-	-	-	-	-	-	-
8	1/4"	-	-	-	-	-	-	-	-	-	-	-	-
10	3/8"	-	-	-	-	-	-	-	-	-	-	-	-
15	1/2"	-	-	-	-	-	-	-	-	-	-	-	-
20	3/4"	26.67	21.34	1/2"	38.1	0.01	0.14	0.18	28.7	28.7	0.19	0.23	0.31
25	1"	33.4	21.34	1/2"	50.8	0.12	0.15	0.22	38.1	38.1	0.36	0.4	0.54
25	1"	33.4	26.67	3/4"	50.8	0.14	0.16	0.22	38.1	38.1	0.38	0.42	0.57
32	1 1/4"	42.16	26.67	3/4"	-	-	-	-	47.75	47.75	0.58	0.68	0.92
32	1 1/4"	42.16	33.4	1"	50.8	0.18	0.22	0.31	47.75	47.75	0.58	0.68	0.92
40	1 1/2"	48.26	21.34	1/2"	63.5	0.19	0.22	0.32	57.15	57.15	0.76	0.91	1.26
40	1 1/2"	48.26	26.67	3/4"	63.5	0.21	0.26	0.35	57.15	57.15	0.81	0.97	1.34
40	1 1/2"	48.26	33.4	1"	63.5	0.23	0.26	0.39	57.15	57.15	0.82	0.99	1.37
40	1 1/2"	48.26	42.16	1 1/4"	63.5	0.21	0.28	0.44	57.15	57.15	0.85	1.02	1.41
50	2"	60.32	26.67	3/4"	76.2	0.25	0.37	0.458	63.5	44.45	1.15	1.48	2.1
50	2"	60.32	33.4	1"	76.2	0.27	0.4	0.5	63.5	50.8	1.24	1.59	2.26
50	2"	60.32	42.16	1 1/4"	76.2	0.3	0.44	0.54	63.5	57.15	1.27	1.63	2.31
50	2"	60.32	48.26	1 1/2"	76.2	0.32	0.45	0.58	63.5	60.45	1.33	1.7	2.41
65	2 1/2"	73.02	33.4	1"	88.9	0.37	0.37	0.78	-	-	-	-	-
65	2 1/2"	73.02	42.16	1 1/4"	88.9	0.37	0.67	0.78	-	-	-	-	-
65	2 1/2"	73.02	48.26	1 1/2"	88.9	0.41	0.77	0.86	76.2	66.8	1.63	2.5	3.4
65	2 1/2"	73.02	60.32	2"	88.9	0.44	0.8	0.92	76.2	69.85	1.77	2.72	3.7
80	3"	88.9	33.4	1"	88.9	0.43	0.85	0.99	-	-	-	-	-
80	3"	88.9	42.16	1 1/4"	88.9	0.45	0.75	1.01	-	-	-	-	-
80	3"	88.9	48.26	1 1/2"	88.9	0.47	0.97	1.07	85.85	73.15	1.73	2.84	3.95
80	3"	88.9	60.32	2"	88.9	0.5	1	1.14	85.85	76.2	1.8	2.95	4.1
80	3"	88.9	73.02	2 1/2"	88.9	0.56	1.08	1.26	85.85	82.55	1.87	3.06	4.25
100	4"	114.3	48.26	1 1/2"	101.6	0.73	1.31	1.86	104.9	85.85	2.83	5.06	7.19
100	4"	114.3	60.32	2"	101.6	0.76	1.36	1.93	104.9	88.9	2.86	5.11	7.26
100	4"	114.3	73.02	2 1/2"	101.6	0.83	1.48	2.1	104.9	95.25	2.87	5.13	7.28
100	4"	114.3	88.9	3"	101.6	0.86	1.54	2.19	104.9	98.55	2.95	5.27	7.48
125	5"	141.3	88.9	3"	127	1.43	2.5	3.63	123.95	111.25	5.18	9.08	13.2
125	5"	141.3	114.3	4"	127	1.55	2.72	3.94	123.95	117.6	5.43	9.53	13.8
150	6"	168.27	73.02	2 1/2"	139.7	1.74	3.29	5.07	143	120.65	3.7	14.5	22.4
150	6"	168.27	88.9	3"	139.7	1.92	3.63	5.59	143	123.95	7.82	14.8	22.9
150	6"	168.27	114.3	4"	139.7	1.99	3.75	5.78	143	130.3	8.06	15.2	23.4
150	6"	168.27	141.3	5"	139.7	2.05	3.86	5.94	143	136.65	8.3	15.7	24.1
200	8"	219.08	114.3	4"	152.4	2.54	4.99	7.73	177.8	155.7	12	23.5	36.4
200	8"	219.08	141.3	5"	152.4	2.78	5.43	8.45	177.8	162.05	12.3	24.1	37.3
200	8"	219.08	168.27	6"	152.4	3.07	6.02	9.33	177.8	168.4	12.5	24.5	38
250	10"	273.05	141.5	5"	177.8	4.77	9.53	13.1	215.9	190.5	18.4	36.8	50.4
250	10"	273.05	168.27	6"	177.8	4.88	9.76	13.4	215.9	193.8	18.8	37.7	51.6
250	10"	273.05	219.08	8"	177.8	5	9.99	13.7	215.9	203.2	19.2	38.4	52.3

For fittings sizes 36" and larger, please contact us for further assistance.

ASME B36.19

DN	NOMINAL DIAMETER (INCH)	UNEQUAL BUTTWELD FITTINGS DIMENSIONS (mm) & WEIGHT (kg's)											
		OUTSIDE DIAMETER			CONCENTRIC & ECCENTRIC				REDUCING TEES				
		OD1	OD2	OUTLET	LENGTH H	SCH.10.S	STD SCH.40S	XS. SCH.80S	CENTRE TO END (C)	CENTRE TO END (M)	SCH.10.S	STD SCH.40S	XS. SCH.80S
300	12"	323.85	168.27	6"	203.2	7.47	14.1	18.8	254	219.2	27.4	51.8	68.8
300	12"	323.85	219.08	8"	203.2	7.69	14.5	19.3	254	228.6	28.2	53.1	70.7
300	12"	323.85	273.05	10"	203.2	8.16	15.4	20.5	254	214.3	28.6	54	71.9
350	14"	355.6	168.27	6"	330.2	14.5	26.3	35	-	-	-	-	-
350	14"	355.6	219.08	8"	330.2	14.6	26.6	35.4	279.4	247.65	38.7	70.4	93.6
350	14"	355.6	273.05	10"	330.2	14.8	26.9	35.8	279.4	257.3	39.5	71.7	95.4
350	14"	355.6	323.85	12"	330.2	15	27.2	36.2	279.4	270	40	72.6	96.6
400	16"	406.4	219.08	8"	355.6	17	31.1	41.4	-	-	-	-	-
400	16"	406.4	273.05	10"	355.6	17.4	31.6	42	304.8	282.7	46.4	84.4	112
400	16"	406.4	323.85	12"	355.6	17.5	31.8	42.3	304.8	295.4	47.7	86.7	115
400	16"	406.4	355.6	14"	355.6	17.7	32.2	42.8	304.8	304.8	48.4	88.1	117
450	18"	457.2	273.05	10"	381	20.5	37.2	49.5	-	-	-	-	-
450	18"	457.2	323.85	12"	381	20.7	37.87	50.1	342.9	320.8	57.4	104	139
450	18"	457.2	355.6	14"	381	21	38.1	50.7	342.9	330.2	58.9	107	143
450	18"	457.2	406.2	16"	381	21.2	38.6	51.3	342.9	330.2	60.2	109	146
500	20"	508	323.85	12"	508	34.9	54.5	72.5	-	-	-	-	-
500	20"	508	355.6	14"	508	35.5	55.4	73.7	381	355.6	97.6	153	203
500	20"	508	406.4	16"	508	36.01	56.3	74.9	381	355.6	98.2	153	204
500	20"	508	457.2	18"	508	36.4	56.8	75.5	381	368.3	98.8	154	205
550	22"	588.8	355.6	14"	508	35.7	55.8	74.2	-	-	-	-	-
550	22"	588.8	406.4	16"	508	38.01	59.5	79.1	419.1	381	119	185	246
550	22"	588.8	457.2	18"	508	40.01	62.7	83.4	419.1	393.7	119	186	248
550	22"	588.8	508	20"	508	41.3	64.5	85.8	419.1	406.4	120	187	249
600	24"	609.6	355.6	14"	508	46.5	63.7	84.7	-	-	-	-	-
600	24"	609.6	406.4	16"	508	48	65.8	87.5	431.8	406.4	171	234	312
600	24"	609.6	457.2	18"	508	49.1	67.2	89.4	431.8	419.1	172	236	313
600	24"	609.6	508	20"	508	49.7	68.1	90.6	431.8	431.8	173	237	315
600	24"	609.6	558.8	22"	508	51.1	70	93.1	431.8	431.8	174	238	317
650	26"	660.4	406.4	16"	609.6	-	78	104	-	-	-	-	-
650	26"	660.4	457.2	18"	609.6	-	82.6	110	-	-	-	-	-
650	26"	660.4	508	20"	609.6	-	86.3	115	-	-	-	-	-
650	26"	660.4	609.6	24"	609.6	-	94	125	-	-	-	-	-
700	28"	711.2	457.2	18"	609.6	-	86	114	-	-	-	-	-
700	28"	711.2	508	20"	609.6	-	90.3	120	-	-	-	-	-
700	28"	711.2	609.6	24"	609.6	-	98.1	130	-	-	-	-	-
700	28"	711.2	660.4	26"	609.6	-	102	136	-	-	-	-	-
750	30"	762	558.8	22"	609.6	-	100	133	-	-	-	-	-
750	30"	762	609.6	24"	609.6	-	102	136	-	-	-	-	-
750	30"	762	660.4	26"	609.6	-	105	140	-	-	-	-	-
750	30"	762	711.2	28"	609.6	-	109	145	-	-	-	-	-
800	32"	812.8	711.2	28"	609.6	-	113	150	-	-	-	-	-
800	32"	812.8	762	30"	609.6	-	117	156	-	-	-	-	-

For fittings sizes 36" and larger, please contact us for further assistance.

SEAMLESS EQUAL BUTTWELD



DN (mm)		NOMINAL DIAMETER (INCH)	EQUAL BUTTWELD FITTINGS DIMENSIONS (mm) & WEIGHT (kg's)																ASME B16.9							
			45° ELBOWS				90° ELBOWS				EQUAL TEES				BUTTWELD END CAPS				STUB ENDS							
			CENTRE TO END (A)	SCH.10S	STD SCH.40S	XS. SCH.80S	CENTRE TO END (A)	SCH.10S	STD SCH.40S	XS. SCH.80S	CENTRE TO END (C)	W	SCH.10S	STD SCH.40S	XS. SCH.80S	LENGTH (E)	SCH.10.S	STD SCH.40S	XS. SCH.80S	DIA OF LAP	LONG ASME	SHORT ASME & MSS	MSS TYPE A (MAX) & ASME	MSS TYPE B (MAX)	SCH 10	STD SCH 40S
6	1/8"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	1/4"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	3/8"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	1/2"	15.88	0.03	0.039	0.05	38.10	0.061	0.078	0.100	25.4	25.4	0.13	0.16	0.22	25.4	0.04	0.046	0.045	34.93	76.2	50.8	3.3	0.76	0.062	0.079	0.129
20	3/4"	19	0.039	0.052	0.078	38.10	0.078	0.103	0.14	28.7	28.7	0.16	0.2	0.294	25.4	0.052	0.059	0.086	42.88	76.2	50.8	3.3	0.76	0.086	0.101	0.17
25	1"	22.22	0.064	0.077	0.1	38.10	0.128	0.154	0.204	38.1	38.1	0.31	0.34	0.399	38.1	0.09	0.109	0.113	50.8	101.6	50.8	3.3	0.76	0.14	0.16	0.24
32	1 1/4"	25.4	0.103	0.13	0.177	47.75	0.206	0.260	0.349	47.75	47.75	0.51	0.59	0.8	38.1	0.113	0.171	0.222	63.5	101.6	50.8	4.83	0.76	0.178	0.263	0.349
40	1 1/2"	28.45	0.142	0.184	0.254	57.15	0.283	0.368	0.507	57.15	57.15	0.76	0.91	1.26	38.1	0.14	0.234	0.344	73.02	101.6	50.8	6.35	0.76	0.213	0.376	0.458
50	2"	35.05	0.239	0.326	0.471	76.20	0.478	0.652	0.9	63.5	63.5	1.24	1.59	2.26	38.1	0.17	0.27	0.344	92.07	152.4	63.5	7.87	0.76	0.376	0.471	0.743
65	2 1/2"	44.45	0.406	0.683	0.897	95.25	0.812	1.37	1.79	76.2	76.2	1.77	2.72	3.7	38.1	0.242	0.42	0.512	104.77	152.4	63.5	7.87	0.76	0.448	0.797	1.06
80	3"	50.8	0.571	1.02	1.44	114.30	1.14	2.04	2.87	85.85	85.85	1.94	3.18	4.42	50.8	0.4	0.69	0.84	127	152.4	63.5	9.65	0.76	0.574	1.133	1.508
100	4"	63.5	0.985	1.92	2.81	152.40	1.97	3.84	5.45	104.9	104.9	3.05	5.45	7.74	64	0.68	1.22	1.61	157.18	152.4	76.2	11.18	0.76	0.87	1.68	2.56
125	5"	79.25	1.71	3.24	4.85	190.50	3.42	6.48	9.69	123.95	123.9	5.43	9.53	13.8	76	1.02	1.91	2.55	185.75	203.2	76.2	11.18	1.52	1.237	2.28	3.601
150	6"	95.25	2.43	4.97	8.02	228.60	4.87	9.94	15.99	143	143	8.18	15.4	23.8	89	1.42	3.23	4.24	215.9	203.2	88.9	12.7	1.52	1.95	3.37	5.57
200	8"	127	5.01	10.1	16.22	304.08	10.00	20.10	31.7	177.8	177.8	12.7	25	38.7	102	2.49	5.67	7.76	269.88	203.2	101.6	12.7	1.52	2.65	5.67	10.12
250	10"	158.75	8.3	17.7	25.37	381.00	15.50	37	49.83	215.9	215.9	16	26	52.9	127	4.9	9.7	12.3	323.88	254	127	12.7	1.52	4.38	9.55	13.95
300	12"	190.5	12.5	28.1	36.8	457.20	25.90	53	72.83	254	254	27.86	39	72.48	152	6.53	13.1	16.6	381	254	152.4	12.7	1.52	6.74	13.8	19.93
350	14"	222.25	17.3	32.93	47.2	533.40	33.60	69	91.6	279.4	279.4	41	74.21	99.78	165	8.16	15.9	21.11	412.75	304.8	152.4	12.7	1.52	7.75	15.46	20.62
400	16"	254	22.7	43.31	62	609.60	43.90	91	121	304.8	304.8	48.7	88.56	114.23	178	14.5	22	29.48	469.9	304.8	152.4	12.7	1.52	9	17.98	23.98
450	18"	285.75	28.7	54.99	79	685.80	56	116	153	342.9	342.9	62	112.33	150	203	18	27	35.92	533.4	304.8	152.4	12.7	1.52	10.5	21	28
500	20"	317.5	41.1	68.13	97.2	762.00	79	140	188	381	381	99	155	207	229	27	34	40.21	584.2	304.8	152.4	12.7	1.52	13.54	23.3	31.07
550	22"	342.9	49.8	81.13	118	838.20	96.40	170	229	419.1	419.1	120	188	250	-	-	-	-	641.35	304.8	152.4	12.7	1.52	16.22	25.86	34
600	24"	381	71.3	98.57	141	914.40	138	206	274	431.8	431.8	175	240	319	267	34.5	44.5	61.23	692.15	304.8	152.4	12.7	1.52	18.94	28.41	37.88
650	26"	406.4	104	114.11	166	990.60	201	242	322	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
700	28"	438.15	118	132.73	190	1066.80	229	275	369	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
750	30"	469.9	139	152.75	218	1143	269	324	423	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
800	32"	501.65	149	156.24	240	1219.20	290	349.53	466	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
850	34"	533.4	169	196.96	272	1295.40	328	395.24	528	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
900	36"	565.15	189	221.2	304	1371.60	367	443.71	590	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

ASME B16.9

OD (mm)	NOMINAL DIAMETER (INCH)	UNEQUAL BUTTWELD FITTINGS DIMENSIONS (mm) & WEIGHT (kg's)											
		OUTSIDE DIAMETER			CONCENTRIC & ECCENTRIC				REDUCING TEES				
		OD1	OD2	OUTLET	LENGTH H	SCH.10.S	STD SCH. 40S	XS. SCH.80S	CENTRE TO END (C)	CENTRE TO END (M)	SCH.10.S	STD SCH. 40S	XS. SCH.80S
6	1/8"	-	-	-	-	-	-	-	-	-	-	-	-
8	1/4"	-	-	-	-	-	-	-	-	-	-	-	-
10	3/8"	-	-	-	-	-	-	-	-	-	-	-	-
15	1/2"	-	-	-	-	-	-	-	-	-	-	-	-
20	3/4"	26.67	21.34	1/2"	38.1	0.01	0.14	0.18	28.7	28.7	0.19	0.23	0.31
25	1"	33.4	21.34	1/2"	50.8	0.12	0.15	0.22	38.1	38.1	0.36	0.4	0.54
25	1"	33.4	26.67	3/4"	50.8	0.14	0.16	0.22	38.1	38.1	0.38	0.42	0.57
32	1 1/4"	42.16	26.67	3/4"	-	-	-	-	47.75	47.75	0.58	0.68	0.92
32	1 1/4"	42.16	33.4	1"	50.8	0.18	0.22	0.31	47.75	47.75	0.58	0.68	0.92
40	1 1/2"	48.26	21.34	1/2"	63.5	0.19	0.22	0.32	57.15	57.15	0.76	0.91	1.26
40	1 1/2"	48.26	26.67	3/4"	63.5	0.21	0.26	0.35	57.15	57.15	0.81	0.97	1.34
40	1 1/2"	48.26	33.4	1"	63.5	0.23	0.26	0.39	57.15	57.15	0.82	0.99	1.37
40	1 1/2"	48.26	42.16	1 1/4"	63.5	0.21	0.28	0.44	57.15	57.15	0.85	1.02	1.41
50	2"	60.32	26.67	3/4"	76.2	0.25	0.37	0.458	63.5	44.45	1.15	1.48	2.1
50	2"	60.32	33.4	1"	76.2	0.27	0.4	0.5	63.5	50.8	1.24	1.59	2.26
50	2"	60.32	42.16	1 1/4"	76.2	0.3	0.44	0.54	63.5	57.15	1.27	1.63	2.31
50	2"	60.32	48.26	1 1/2"	76.2	0.32	0.45	0.58	63.5	60.45	1.33	1.7	2.41
65	2 1/2"	73.02	33.4	1"	88.9	0.37	0.37	0.78	-	-	-	-	-
65	2 1/2"	73.02	42.16	1 1/4"	88.9	0.37	0.67	0.78	-	-	-	-	-
65	2 1/2"	73.02	48.26	1 1/2"	88.9	0.41	0.77	0.86	76.2	66.8	1.63	2.5	3.4
65	2 1/2"	73.02	60.32	2"	88.9	0.44	0.8	0.92	76.2	69.85	1.77	2.72	3.7
80	3"	88.9	33.4	1"	88.9	0.43	0.85	0.99	-	-	-	-	-
80	3"	88.9	42.16	1 1/4"	88.9	0.45	0.75	1.01	-	-	-	-	-
80	3"	88.9	48.26	1 1/2"	88.9	0.47	0.97	1.07	85.85	73.15	1.73	2.84	3.95
80	3"	88.9	60.32	2"	88.9	0.5	1	1.14	85.85	76.2	1.8	2.95	4.1
80	3"	88.9	73.02	2 1/2"	88.9	0.56	1.08	1.26	85.85	82.55	1.87	3.06	4.25
100	4"	114.3	48.26	1 1/2"	101.6	0.73	1.31	1.86	104.9	85.85	2.83	5.06	7.19
100	4"	114.3	60.32	2"	101.6	0.76	1.36	1.93	104.9	88.9	2.86	5.11	7.26
100	4"	114.3	73.02	2 1/2"	101.6	0.83	1.48	2.1	104.9	95.25	2.87	5.13	7.28
100	4"	114.3	88.9	3"	101.6	0.86	1.54	2.19	104.9	98.55	2.95	5.27	7.48
125	5"	141.3	88.9	3"	127	1.43	2.5	3.63	123.95	111.25	5.18	9.08	13.2
125	5"	141.3	114.3	4"	127	1.55	2.72	3.94	123.95	117.6	5.43	9.53	13.8
150	6"	168.27	73.02	2 1/2"	139.7	1.74	3.29	5.07	143	120.65	3.7	14.5	22.4
150	6"	168.27	88.9	3"	139.7	1.92	3.63	5.59	143	123.95	7.82	14.8	22.9
150	6"	168.27	114.3	4"	139.7	1.99	3.75	5.78	143	130.3	8.06	15.2	23.4
150	6"	168.27	141.3	5"	139.7	2.05	3.86	5.94	143	136.65	8.3	15.7	24.1
200	8"	219.08	114.3	4"	152.4	2.54	4.99	7.73	177.8	155.7	12	23.5	36.4
200	8"	219.08	141.3	5"	152.4	2.78	5.43	8.45	177.8	162.05	12.3	24.1	37.3
200	8"	219.08	168.27	6"	152.4	3.07	6.02	9.33	177.8	168.4	12.5	24.5	38
250	10"	273.05	141.30	5"	177.8	4.77	9.53	13.1	215.9	190.5	18.4	36.8	50.4
250	10"	273.05	168.27	6"	177.8	4.88	9.76	13.4	215.9	193.8	18.8	37.7	51.6
250	10"	273.05	219.08	8"	177.8	5	9.99	13.7	215.9	203.2	19.2	38.4	52.3

For fittings sizes 36" and larger, please contact us for further assistance.

ASME B16.9

SEAMLESS BUTTWELD REDUCER

DN	NOMINAL DIAMETER (INCH)	UNEQUAL BUTTWELD FITTINGS DIMENSIONS (mm) & WEIGHT (kg's)												
		OUTSIDE DIAMETER			CONCENTRIC & ECCENTRIC				REDUCING TEES					
		OD1	OD2	OUTLET	LENGTH H	SCH.10.S	STD SCH.40S	XS. SCH.80S	CENTRE TO END (C)	CENTRE TO END (W)	SCH.10.S	STD SCH.40S	XS. SCH.80S	
300	12"	323.85	168.27	6"	203.2	7.47	14.1	18.8	254	219.2	27.4	51.8	68.8	
300	12"	323.85	219.08	8"	203.2	7.69	14.5	19.3	254	228.6	28.2	53.1	70.7	
300	12"	323.85	273.05	10"	203.2	8.16	15.4	20.5	254	214.3	28.6	54	71.9	
350	14"	355.6	168.27	6"	330.2	14.5	26.3	35	-	-	-	-	-	
350	14"	355.6	219.08	8"	330.2	14.6	26.6	35.4	279.4	247.65	38.7	70.4	93.6	
350	14"	355.6	273.05	10"	330.2	14.8	26.9	35.8	279.4	257.3	39.5	71.7	95.4	
350	14"	355.6	323.85	12"	330.2	15	27.2	36.2	279.4	270	40	72.6	96.6	
400	16"	406.4	219.08	8"	355.6	17	31.1	41.4	-	-	-	-	-	
400	16"	406.4	273.05	10"	355.6	17.4	31.6	42	304.8	282.7	46.4	84.4	112	
400	16"	406.4	323.85	12"	355.6	17.5	31.8	42.3	304.8	295.4	47.7	86.7	115	
400	16"	406.4	355.6	14"	355.6	17.7	32.2	42.8	304.8	304.8	48.4	88.1	117	
450	18"	457.2	273.05	10"	381	20.5	37.2	49.5	-	-	-	-	-	
450	18"	457.2	323.85	12"	381	20.7	37.87	50.1	342.9	320.8	57.4	104	139	
450	18"	457.2	355.6	14"	381	21	38.1	50.7	342.9	330.2	58.9	107	143	
450	18"	457.2	406.2	16"	381	21.2	38.6	51.3	342.9	330.2	60.2	109	146	
500	20"	508	323.85	12"	508	34.9	54.5	72.5	-	-	-	-	-	
500	20"	508	355.6	14"	508	35.5	55.4	73.7	381	355.6	97.6	153	203	
500	20"	508	406.4	16"	508	36.01	56.3	74.9	381	355.6	98.2	153	204	
500	20"	508	457.2	18"	508	36.4	56.8	75.5	381	368.3	98.8	154	205	
550	22"	588.8	355.6	14"	508	35.7	55.8	74.2	-	-	-	-	-	
550	22"	588.8	406.4	16"	508	38.01	59.5	79.1	419.1	381	119	185	246	
550	22"	588.8	457.2	18"	508	40.01	62.7	83.4	419.1	393.7	119	186	248	
550	22"	588.8	508	20"	508	41.3	64.5	85.8	419.1	406.4	120	187	249	
600	24"	609.6	355.6	14"	508	46.5	63.7	84.7	-	-	-	-	-	
600	24"	609.6	406.4	16"	508	48	65.8	87.5	431.8	406.4	171	234	312	
600	24"	609.6	457.2	18"	508	49.1	67.2	89.4	431.8	419.1	172	236	313	
600	24"	609.6	508	20"	508	49.7	68.1	90.6	431.8	431.8	173	237	315	
600	24"	609.6	558.8	22"	508	51.1	70	93.1	431.8	431.8	174	238	317	
650	26"	660.4	406.4	16"	609.6	-	78	104	-	-	-	-	-	
650	26"	660.4	457.2	18"	609.6	-	82.6	110	-	-	-	-	-	
650	26"	660.4	508	20"	609.6	-	86.3	115	-	-	-	-	-	
650	26"	660.4	609.6	24"	609.6	-	94	125	-	-	-	-	-	
700	28"	711.2	457.2	18"	609.6	-	86	114	-	-	-	-	-	
700	28"	711.2	508	20"	609.6	-	90.3	120	-	-	-	-	-	
700	28"	711.2	609.6	24"	609.6	-	98.1	130	-	-	-	-	-	
700	28"	711.2	660.4	26"	609.6	-	102	136	-	-	-	-	-	
750	30"	762	558.8	22"	609.6	-	100	133	-	-	-	-	-	
750	30"	762	609.6	24"	609.6	-	102	136	-	-	-	-	-	
750	30"	762	660.4	26"	609.6	-	105	140	-	-	-	-	-	
750	30"	762	711.2	28"	609.6	-	109	145	-	-	-	-	-	
800	32"	812.8	711.2	28"	609.6	-	113	150	-	-	-	-	-	
800	32"	812.8	762	30"	609.6	-	117	156	-	-	-	-	-	

For fittings sizes 36" and larger, please contact us for further assistance.

- Screwed male/Female Parallel Thread / Tapper Thread
- ASA 150LB(68KG) Rating
- Available in AISI 316, CAST
- ASTM A351 CF8M STANDARD

EQUAL BSP FITTINGS

DN		EQUAL BSP FITTINGS																										
		BARREL NIPPLES		90° ELBOWS		EQUAL TEES		HEX CAPS			HEX PLUGS			HEX NIPPLES			HOSE TAIL NIPPLES			SQUARE HEAD PLUG			SOCKETS		UNIONS			
		LENGTH (L)	WEIGHT (KG)	CENTRE TO END (L) (mm)	WEIGHT (KG)	CENTRE TO END (L) (mm)	WEIGHT (KG)	LENGTH (L)	WIDTH ACROSS FLATS (W) (mm)	WEIGHT (KG)	LENGTH (L)	WIDTH ACROSS FLATS (W) (mm)	WEIGHT (KG)	LENGTH (L)	WIDTH ACROSS FLATS (W) (mm)	WEIGHT (KG)	LENGTH (L)	WIDTH ACROSS FLATS (W) (mm)	WEIGHT (KG)	LENGTH (L)	WIDTH ACROSS FLATS (W) (mm)	WEIGHT (KG)	LENGTH (L)	WEIGHT (KG)	LENGTH (L) (mm)	WEIGHT (KG)	LENGTH (L) (mm)	WEIGHT (KG)
6	1/8"	40	0,2	19	0,03	18	0,05	14	16	0,02	14	16	0,02	30	13	0,02	44	16	0,012	17	7	0,01	18	0,02	27	26	0,13	
8	1/4"	40	0,3	20	0,04	19	0,05	15	16	0,03	17	16	0,03	25	15	0,03	48	20	0,031	16	8	0,02	24	0,04	31	30	0,11	
10	3/8"	40	0,4	24	0,06	23	0,09	17	19	0,03	20	19	0,03	29	18	0,05	60	26	0,049	21	12	0,03	25	0,05	35	34	0,18	
15	1/2"	60	0,8	22	0,1	26	0,14	20	23	0,07	20	23	0,05	37	24	0,08	65	33	0,077	25	14	0,03	34	0,09	37	39	0,22	
20	3/4"	60	0,11	28	0,14	28	0,21	22	29	0,1	25	29	0,09	41	27	0,11	67	37	0,137	23	17	0,07	34	0,13	42	47	0,33	
25	1"	60	0,16	34	0,27	37	0,36	26	36	0,17	27	36	0,12	45	36	0,17	76	47	0,211	31	19	0,1	42	0,2	50	52	0,5	
32	1 1/4"	80	0,29	39	0,38	40	0,5	28	44	0,24	30	44	0,19	50	44	0,25	82	52	0,274	35	23	0,15	47	0,29	54	67	0,7	
40	1 1/2"	80	0,35	40	0,51	48	0,7	28	52	0,38	31	52	0,27	56	51	0,37	99	72	0,367	36	26	0,21	47	0,34	58	70	0,87	
50	2"	100	0,58	53	0,75	52	1,01	29	62	0,47	32	62	0,4	61	62	0,53	99	72	0,606	38	28	0,31	51	0,52	63	89	1,39	
65	2 1/2"	100	0,92	65	1,69	60	2,41	32	78	0,85	39	78	0,76	75	78	1,1	110	91	0,71	48	41	0,59	65	0,78	72	105	2,07	
80	3"	120	1,45	70	2,33	72	3,32	34	92	1,24	43	92	1,03	72	92	1,37	120	105	0,736	45	35	0,71	71	1,05	85	120	2,98	
100	4"	120	2,07	96	3,43	95	4,81	38	118	2,09	49	118	1,66	83	116	1,9	135	120	1,4	62	58	1,1	78	1,9	90	154	4,82	



REDUCED BSP FITTINGS

- Screwed male/Female Parallel Thread / Tapper Thread
- ASA 150LB(68KG) Rating
- Available in AISI 316, CAST
- ASTM A351 CF8M STANDARD

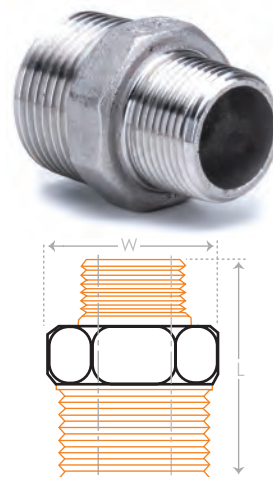


DN (mm)	SIZE	REDUCING BUSH			REDUCING NIPPLES			REDUCING SOCKETS		
		LENGHT (L) (mm)	WIDTH ACROSS FLAT (mm)	WEIGHT (kg)	LENGHT (L) (mm)	WIDTH ACROSS FLAT (mm)	WEIGHT (kg)	LENGHT (L) (mm)	WIDTH ACROSS FLAT (mm)	WEIGHT (kg)
8 x 6	1/4" x 1/8"	18	16	0,01	28	16	0,01	26	18	0,03
10 x 8	3/8" x 1/4"	18	19	0,02	34	19	0,02	30	22	0,05
15 x 6	1/2" x 1/8"	21	26	0,03	34	22	0,03	27	24	0,06
15 x 8	1/2" x 1/4"	21	24	0,04	35	23	0,04	32	26	0,08
15 x 10	1/2" x 3/8"	21	26	0,06	36	23	0,06	35	25	0,07
20 x 8	3/4" x 1/4"	24	29	0,06	38	29	0,06	32	30	0,11
20 x 10	3/4" x 3/8"	24	31	0,08	40	29	0,08	36	30	0,11
20 x 15	3/4" x 1/2"	24	29	0,07	40	29	0,07	36	30	0,13
25 x 8	1" x 1/4"	16	35	0,05	40	35	0,05	33	37	0,17
25 x 10	1" x 3/8"	26	35	0,14	40	35	0,14	36	38	0,18
25 x 15	1" x 1/2"	27	38	0,12	42	35	0,12	40	38	0,17
25 x 20	1" x 3/4"	27	38	0,15	43	35	0,15	40	38	0,18
32 x 20	1 1/4" x 3/4"	27	46	0,14	45	44	0,164	45	48	0,164
32 x 25	1 1/4" x 1"	29	46	0,33	48	44	0,33	45	48	0,28
40 x 20	1 1/2" 3/4"	29	50	0,155	49	49	0,196	47	53	0,33
40 x 25	1 1/2" x 1"	32	51	0,26	49	49	0,26	52	53	0,196
40 x 32	1 1/2" x 1 1/4"	32	53	0,17	50	51	0,17	49	54	0,38
50 x 25	2" x 1"	35	62	0,56	54	62	0,56	50	65	0,52
50 x 32	2" x 1 1/4"	36	63	0,45	52	62	0,45	50	65	0,52
50 x 40	2" x 1 1/2"	36	63	0,37	57	62	0,37	50	65	0,57
65 x 50	2 1/2" x 2"	39	80	0,51	66	78	0,51	55	82	0,51
80 x 50	3" x 2"	44	93	0,94	68	92	0,94	61	94	1,65
80 x 65	3" x 2 1/2"	45	92	1,23	70	92	1,23	64	95	1,53
100 x 80	4" x 3"	48	116	1,34	82	116	1,145	63	120	1,4

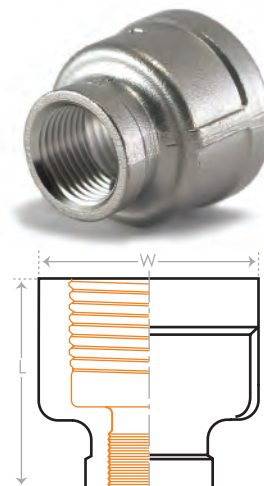
REDUCING BUSH



REDUCING NIPPLE



REDUCING SOCKET



SCREWED CLASS 3000LB NPT 316 FITTINGS - ASTM A182M AND ASME B16.11



SIZE (INCH)	DN (MM)	HEX REDUCING BUSH	HEX REDUCING NIPPLE	SWAGE NIPPLE TBE 80S	REDUCING INSERT
1/4" x 1/8"	8 x 6	0,02	0,05	0,04	0,04
3/8" x 1/8"	10 x 6	0,02	0,06	0,06	0,05
3/8" x 1/4"	10 x 8	0,03	0,06	0,06	0,05
1/2" x 1/8"	15 x 6	0,04	0,08	0,14	0,10
1/2" x 1/4"	15 x 8	0,06	0,08	0,14	0,10
1/2" x 3/8"	15 x 10	0,06	0,08	0,18	0,10
3/4" x 1/4"	20 x 8	0,08	1,15	0,18	0,12
3/4" x 3/8"	20 x 10	0,07	0,17	0,18	0,12
3/4" x 1/2"	20 x 15	0,05	0,17	0,18	0,12
1" x 1/4"	25 x 8	0,12	0,38	0,25	0,16
1" x 3/8"	25 x 10	0,14	0,38	0,25	0,16
1" x 1/2"	25 x 15	0,12	0,38	0,25	0,16
1" x 3/4"	25 x 20	0,12	0,38	0,25	0,16
1 1/2" x 1/2"	40 x 15	0,21	0,63	0,60	0,45
1 1/2" x 3/4"	40 x 20	0,21	0,63	0,60	0,45
1 1/2" x 1"	40 x 25	0,21	0,63	0,60	0,45
1 1/2" x 1 1/4"	40 x 32	0,21	0,64	0,60	0,45
2" x 1"	50 x 25	0,45	0,68	1,14	0,70
2" x 1 1/2"	50 x 40	0,50	0,70	1,14	0,70

PRODUCT RANGE AND THEORETICAL WEIGHT (Kg)



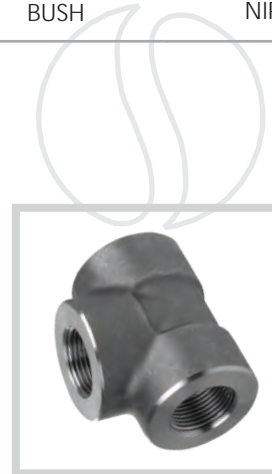
HEX REDUCING
BUSH



HEX REDUCING
NIPPLE



SWAGE NIPPLE



FEMALE TEE



CAP



HEX NIPPLE



COUPLING

GRADE 316		PRODUCT RANGE AND THEORETICAL WEIGHT (Kg)											
SIZE (INCH)	DN (MM)	HEX CAP	COUPLING	45° ELBOW	90° ELBOW	HEX NIPPLE	HEX PLUG	UNION	EQUAL TEE	SCHEULE 40S		SCHEULE 80S	
										NIPPLE TBE 100	NIPPLE TOE 75	NIPPLE TBE 100	NIPPLE TOE 75
1/4"	8	0,05	0,06	0,13	0,14	0,03	0,03	0,21	0,20	0,06	0,05	0,08	0,06
3/8"	10	0,06	0,07	0,25	0,27	0,06	0,05	0,27	0,31	0,08	0,06	0,11	0,09
1/2"	15	0,13	0,14	0,36	0,37	0,08	0,07	0,46	0,49	0,13	0,09	0,16	0,10
3/4"	20	0,21	0,20	0,53	0,60	0,15	0,13	0,08	0,80	0,17	0,12	0,22	0,16
1"	25	0,40	0,40	0,78	1,08	0,24	0,22	0,99	1,31	0,24	0,18	0,31	0,23
1 1/4"	32	0,60	0,73	1,02	1,22	0,37	0,41	1,55	1,61	0,33	0,24	0,44	0,35
1 1/2"	40	0,73	1,03	1,70	2,45	0,45	0,49	1,90	3,20	0,40	0,30	0,53	0,40
2"	50	1,10	1,35	2,35	2,50	0,76	0,77	2,86	3,55	0,53	0,40	0,74	0,56



45° ELBOW



90° ELBOW



PLUG



UNION



BRANCH OUTLET
CLASS 3000LB 304L
& 316L ASTM A182M
& ASME B16.11

PRODUCT RANGE AND
THEORETICAL WEIGHT (Kg)



SOCKET OUTLET



TREADED OUTLET



WELDING OUTLET

SIZE (Inch)	DN (mm)	SOCKET OUTLET	TREADED OUTLET	WELDING OUTLET
1/2"	15	0,15	0,12	0,13
3/4"	20	0,17	0,24	0,24
1"	25	0,27	0,38	0,38
1 1/2"	40	0,48	0,66	0,66
2"	50	0,75	1,02	1,02



SOCKET WELD CLASS 3000 FITTINGS ASTM A182M & ASME B16.11

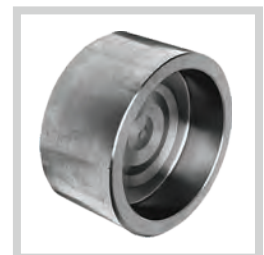
PRODUCT RANGE AND THEORETICAL WEIGHT (Kg)

GRADE 316L

SIZE (Inch)	DN (mm)	CAP	COUPLING	45° ELBOW	90° ELBOW	EQUAL TEE	UNION
1/4"	8	0,06	0,07	0,25	0,26	0,30	0,21
1/2"	15	0,12	0,14	0,36	0,36	0,50	0,30
3/4"	20	0,21	0,20	0,53	0,60	0,80	0,50
1"	25	0,40	0,40	0,80	1,10	1,31	0,80
1 1/4"	32	0,60	0,70	1,00	1,20	1,61	1,20
1 1/2"	40	0,70	1,00	1,70	2,40	3,20	1,50
2"	50	1,10	1,30	2,30	2,50	3,50	2,30

GRADE 316L REDUCING FITTINGS

DN	SIZE (INCH)
20 x 15	0,12
25 x 15	0,16
25 x 20	0,16
40 x 20	0,45
40 x 25	0,45
50 x 25	0,7
50 x 40	0,7



CAP



REDUCING INSERT



45° ELBOW



90° ELBOW



EQUAL TEE



UNION



COUPLING

1 PIECE

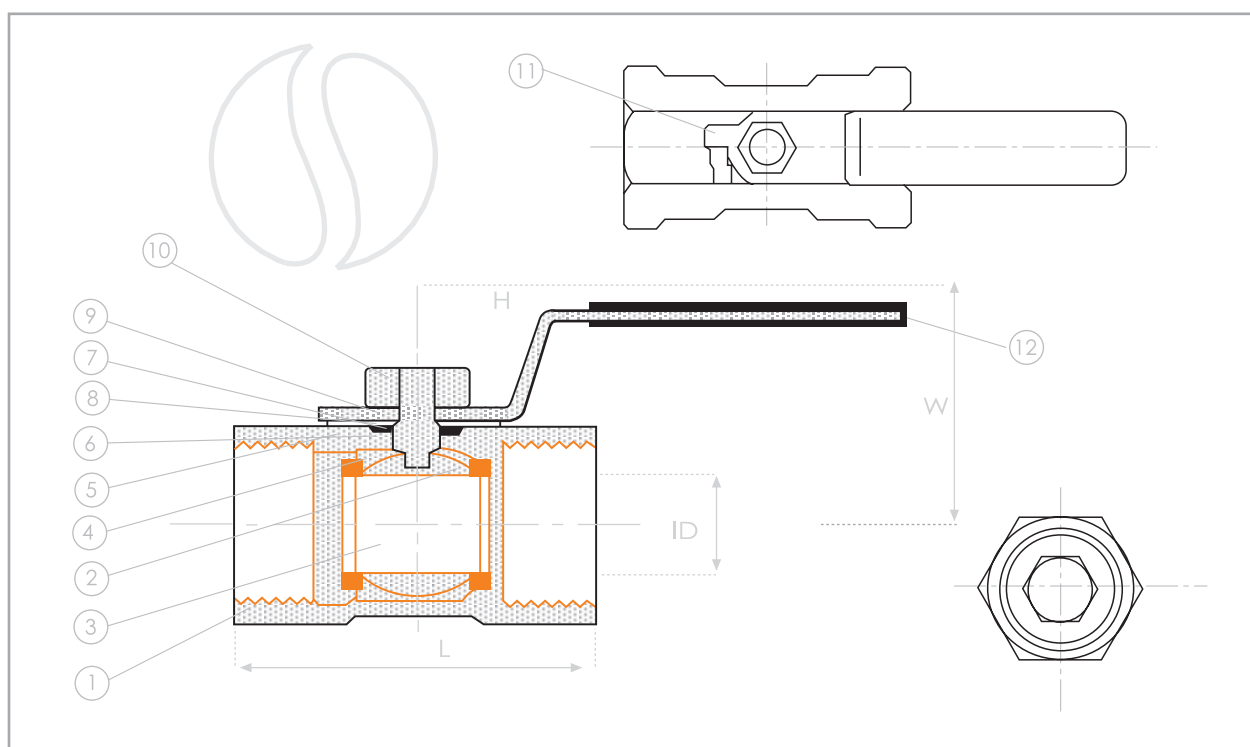
- Stainless Steel 316 Ball Valve, Cast
- Reduced Port - Threaded End
- One - piece economy type
- ASTM A-351 CF8M
- Standard 800 - 1000 W.O.G
- Lockable Handles

- Reduced Bore
- Blow Out Proof Stem
- 1000 PSI (69 Bar) W.O.G
- Testing to API 598
- BSP Threaded
- Temp Range (deg) - 20 - 200°



DN	SIZE (INCH)	ID (MM)	LENGTH (MM)	WIDTH (MM)	HANDLE (MM)	WEIGHT (KG)
8	1/4"	5	40	31	85	0,07
10	3/8"	7	44	31	92	0,11
15	1/2"	9,2	57	42	108	0,17
20	3/4"	12,5	60	42	108	0,25
25	1"	15	71	52	128	0,4
32	1 1/4"	20	78	54	128	0,67
40	1 1/2"	25	83	62	144	0,82
50	2"	32	100	68	165	1,35
65	2 1/2"	40	128	85	240	2,08
80	3"	50	150	100	171	3,4
100	4"	-	-	-	-	-

NO.	PART TIME	MATERIALS
1	Body	CF8M
2	Insert	CF8M
3	Ball	CF8M
4	Ball Seat	PTFE
5	Stem	S/S 316
6	Thrust Washer	PTFE
7	Steam Seal	PTFE
8	Gland Washer	S/S 304
9	Spring Washer	S/S 304
10	Nut	S/S 304
11	Lever Handle	S/S 304
12	Handle Sleeve	PLASTIC



STAINLESS STEEL BALL VALVES

3 PIECE

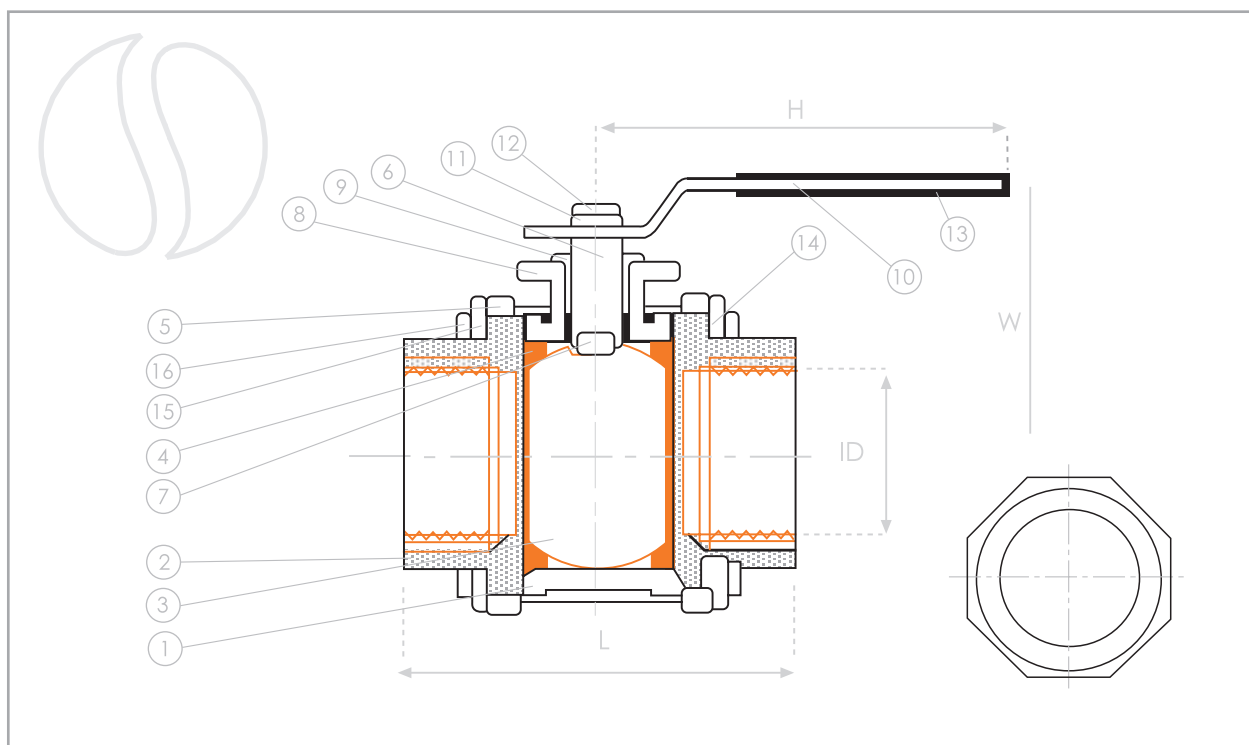
- Stainless Steel 316 Ball Valve, Cast
- Full Port - Compact Design
- Three - piece bolted/in-line maintenance type to ASTM A-351 CF8M
- Standard 800 - 1000 W.O.G
- Lockable Handles

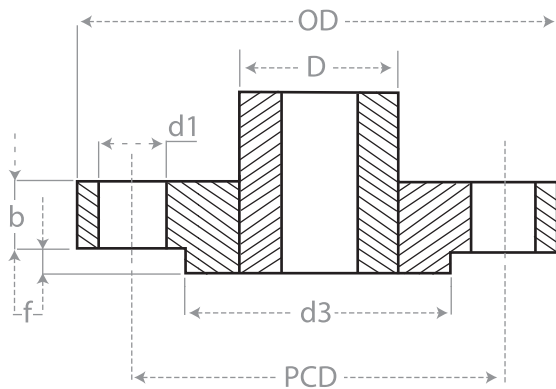
- Full Bore
- Blow Out Proof Stem
- 1000 PSI (69 Bar) W.O.G
- Testing to API 598
- BSP Threaded
- Seat / Seal PTFE
- Temp Range (deg) - 20 - 200°



DN	SIZE (INCH)	ID (MM)	LENGTH (MM)	WIDTH (MM)	HANDLE (MM)	WEIGHT (KG)
8	1/4"	11,6	56	48	100	0,45
10	3/8"	12,7	56	52	100	0,4
15	1/2"	15	64	56	100	0,65
20	3/4"	20	77	62	120	0,85
25	1"	25	80	62	130	1,2
32	1 1/4"	32	98	80	143	2
40	1 1/2"	38	102	78	165	2,7
50	2"	50,8	125	93	195	3,45
65	2 1/2"	65	160	135	244	7,6
80	3"	80	180	140	255	12,6
100	4"	100	220	157	280	20,6

NO.	PART TIME	MATERIALS
1	Body	CF8M
2	Cap	CF8M
3	Ball	CF8M
4	Ball Seat	PTFE
5	Gasket	PTFE
6	Stem	S/S 316
7	Thrust Washer	PTFE
8	Packing	PTFE
9	Gland Nut	S/S 304
10	Handle	S/S 304
11	Stem Washer	S/S 304
12	Stem Nut	S/S 304
13	Plastic Cover	PLASTIC
14	Bolt	S/S 304
15	Spring Washer	S/S 304
16	Hex Nut	S/S 304





FLANGE TABLES

15NB NOMINAL BORE (1/2") PIPE OD 21.3mm

STANDARD	CLASS / TABLE	FLANGE OD	FLANGE THICKNESS B)	HUB		RAISED RACE DIA (d3)	RAISED FACE Height	NO. OFF HOLES	HOLE DIA (d1)	BOLT SIZE	PCD	MASS KG
				A (mm)	X (mm)							
BS 4504	6/3	80.0	12.0	-	-	40.0	2.0	4	11.0	M10	55.0	0.4
	10/3	95.0	14.0	-	-	45.0	2.0	4	14.0	M12	65.0	0.6
	16/3	95.0	14.0	-	-	45.0	2.0	4	14.0	M12	65.0	0.6
	25/3	95.0	16.0	-	-	45.0	2.0	4	14.0	M12	65.0	0.7
	40/3	95.0	16.0	-	-	45.0	2.0	4	14.0	M12	65.0	0.7
SABS 1123	600/3	80.0	10.0	-	-	40.0	2.0	4	11.0	M10	55.0	0.3
	1000/3	95.0	10.0	-	-	45.0	2.0	4	14.0	M12	65.0	0.4
	1600/3	95.0	10.0	-	-	45.0	2.0	4	14.0	M12	65.0	0.4
	2500/3	95.0	14.0	-	-	45.0	2.0	4	14.0	M12	65.0	0.6
	4000/3	95.0	14.0	-	-	45.0	2.0	4	14.0	M12	65.0	0.6
BS 10	D	95.3	4.8	-	-	-	-	4	14.3	12.7	66.7	0.7
	E	95.3	6.3	-	-	-	-	4	14.3	12.7	66.7	0.7
	F	95.3	9.5	-	-	-	-	4	14.3	12.7	66.7	0.7
	H	114.3	12.7	-	-	-	-	4	18	16	82.6	0.7
ASME B16.5	150	88.9	11.1	-	-	34.9	1.6	4	15.9	1/2"	60.3	0.3
	300	95.2	14.3	-	-	34.9	1.6	4	15.9	1/2"	66.7	0.6
	600	95.2	20.6	-	-	34.9	6.4	4	15.9	1/2"	34.9	-
ASME B16.5 WELD NECK	150	88.9	11.1	21.3	30.2	34.9	1.6	4	15.9	1/2"	60.3	0.3
	300	95.2	14.3	21.3	38.1	34.9	1.6	4	15.9	1/2"	66.7	0.6
	600	95.2	20.6	21.3	38.1	34.9	6.4	4	15.9	1/2"	34.9	0.74

20NB NOMINAL BORE (3/4") PIPE OD 26.9mm

STANDARD	CLASS / TABLE	FLANGE OD	FLANGE THICKNESS B)	HUB		RAISED RACE DIA (d3)	RAISED FACE Height	NO. OFF HOLES	HOLE DIA (d1)	BOLT SIZE	PCD	MASS KG
				A (mm)	X (mm)							
BS 4504	6/3	90.0	14.0	-	-	50.0	2.0	4	11.0	M10	65.0	0.5
	10/3	105.0	16.0	-	-	58.0	2.0	4	14.0	M12	75.0	0.9
	16/3	105.0	16.0	-	-	58.0	2.0	4	14.0	M12	75.0	0.9
	25/3	105.0	18.0	-	-	58.0	2.0	4	14.0	M12	75.0	1.0
	40/3	105.0	18.0	-	-	58.0	2.0	4	14.0	M12	75.0	1.0
SABS 1123	600/3	90.0	10.0	-	-	50.0	2.0	4	11.0	M10	65.0	0.4
	1000/3	105.0	10.0	-	-	58.0	2.0	4	14.0	M12	75.0	0.5
	1600/3	105.0	10.0	-	-	58.0	2.0	4	14.0	M12	75.0	0.5
	2500/3	105.0	14.0	-	-	58.0	2.0	4	14.0	M12	75.0	0.8
	4000/3	105.0	14.0	-	-	58.0	2.0	4	14.0	M12	75.0	0.8
BS 10	D	101.6	4.8	-	-	-	-	4	14.2	12.7	73.0	0.8
	E	101.6	6.3	-	-	-	-	4	14.2	12.7	73.0	0.8
	F	101.6	9.5	-	-	-	-	4	14.2	12.7	73.0	0.8
	H	114.3	12.7	-	-	-	-	4	18	16	82.6	0.9
ASME B16.5	150	98.4	12.7	-	-	42.9	1.6	4	15.9	1/2"	69.8	0.6
	300	117.5	15.9	-	-	42.9	1.6	4	19.1	5/8"	82.5	1.1
	600	117.5	22.2	-	-	42.9	6.4	4	19.1	5/8"	82.5	-
ASME B16.5 WELD NECK	150	98.4	12.7	26.7	38.1	42.9	1.6	4	15.9	1/2"	69.8	0.6
	300	117.5	15.9	26.7	47.7	42.9	1.6	4	19.1	5/8"	82.5	1.1
	600	117.5	22.1	26.7	47.8	42.9	6.4	4	19.1	5/8"	82.5	-

25NB NOMINAL BORE (1") PIPE OD 33.4mm

STANDARD	CLASS / TABLE	FLANGE OD	FLANGE THICKNESS B)	HUB		RAISED RACE DIA (d3)	RAISED FACE Height	NO. OFF HOLES	HOLE DIA (d1)	BOLT SIZE	PCD	MASS KG
				A (mm)	X (mm)							
BS 4504	6/3	100.0	14.0	-	-	60.0	2.0	4	11.0	M10	75.0	0.7
	10/3	115.0	16.0	-	-	68.0	2.0	4	14.0	M12	85.0	1.0
	16/3	115.0	16.0	-	-	68.0	2.0	4	14.0	M12	85.0	1.0
	25/3	115.0	18.0	-	-	68.0	2.0	4	14.0	M12	85.0	1.2
	40/3	115.0	18.0	-	-	68.0	2.0	4	14.0	M12	85.0	1.2
SABS 1123	600/3	100.0	10.0	-	-	60.0	2.0	4	11.0	M10	75.0	0.5
	1000/3	115.0	10.0	-	-	68.0	2.0	4	14.0	M12	85.0	0.6
	1600/3	115.0	10.0	-	-	68.0	2.0	4	14.0	M12	85.0	0.6
	2500/3	115.0	16.0	-	-	68.0	2.0	4	14.0	M12	85.0	1.1
	4000/3	115.0	16.0	-	-	68.0	2.0	4	14.0	M12	85.0	1.1
BS 10	D	114.3	4.8	-	-	-	-	4	12.7	12.7	82.6	1.0
	E	114.3	7.1	-	-	-	-	4	12.7	12.7	82.6	0.9
	F	120.3	9.5	-	-	-	-	4	15.9	15.9	87.3	1.0
	H	120.6	14.3	-	-	-	-	4	18	16	87.3	1.1
ASME B16.5	150	107.9	14.3	-	-	50.8	1.6	4	15.9	1/2"	79.4	0.8
	300	123.8	17.5	-	-	50.8	1.6	4	19.1	5/8"	88.9	1.4
	600	123.8	23.8	-	-	50.8	6.4	4	19.1	5/8"	88.9	-
ASME B16.5 WELD NECK	150	107.9	14.3	33.5	49.3	50.8	1.6	4	15.9	1/2"	79.4	0.8
	300	123.8	17.5	33.5	53.8	50.8	1.6	4	19.1	5/8"	88.9	1.4
	600	123.8	23.8	33.5	53.8	50.8	6.4	4	19.1	5/8"	88.9	-

32NB NOMINAL BORE (1 1/4") PIPE OD 42.4mm

STANDARD	CLASS / TABLE	FLANGE OD	FLANGE THICKNESS B)	HUB		RAISED RACE DIA (d3)	RAISED FACE Height	NO. OFF HOLES	HOLE DIA (d1)	BOLT SIZE	PCD	MASS KG
				A (mm)	X (mm)							
BS 4504	6/3	120.0	16.0	-	-	70.0	2.0	4	14.0	M12	90.0	1.1
	10/3	140.0	16.0	-	-	78.0	2.0	4	18.0	M16	100.0	1.5
	16/3	140.0	16.0	-	-	78.0	2.0	4	18.0	M16	100.0	1.5
	25/3	140.0	18.0	-	-	78.0	2.0	4	18.0	M16	100.0	1.7
	40/3	140.0	18.0	-	-	78.0	2.0	4	18.0	M16	100.0	1.7
SABS 1123	600/3	120.0	10.0	-	-	70.0	2.0	4	14.0	M12	90.0	0.7
	1000/3	140.0	10.0	-	-	78.0	2.0	4	18.0	M16	100.0	0.9
	1600/3	140.0	10.0	-	-	78.0	2.0	4	18.0	M16	100.0	0.9
	2500/3	140.0	18.0	-	-	78.0	2.0	4	18.0	M16	100.0	1.7
	4000/3	140.0	18.0	-	-	78.0	2.0	4	18.0	M16	100.0	1.7
BS 10	D	120.7	6.3	-	-	-	-	4	14.2	12.7	87.3	1.0
	E	120.7	7.9	-	-	-	-	4	14.2	12.7	87.3	1.0
	F	133.3	12.7	-	-	-	-	4	17.5	15.9	98.4	1.2
	H	133.4	17.5	-	-	-	-	4	18	16	98.4	1.5
ASME B16.5	150	117.5	15.9	-	-	63.5	1.6	4	15.9	1/2"	88.9	1.0
	300	133.4	19.1	-	-	63.5	1.6	4	19.1	5/8"	98.4	1.8
	600	133.4	26.9	-	-	63.5	6.4	4	19.1	5/8"	98.4	-
ASME B16.5 WELD NECK	150	117.5	15.9	42.2	58.7	63.5	1.6	4	15.9	1/2"	88.9	1
	300	133.4	19.1	42.2	63.5	63.5	1.6	4	19.1	5/8"	98.4	1.8
	600	133.4	26.9	42.2	63.5	63.5	6.4	4	19.1	5/8"	98.4	-

FLANGE TABLES



40NB NOMINAL BORE (1 1/2") PIPE OD 48.26mm

STANDARD	CLASS / TABLE	FLANGE OD	FLANGE THICKNESS B	HUB		RAISED RACE DIA (d3)	RAISED FACE Height	NO. OFF HOLES	HOLE DIA (d1)	BOLT SIZE	PCD	MASS KG
				A (mm)	X (mm)							
BS 4504	6/3	130.0	16.0	-	-	80.0	3.0	4	14.0	M12	100.0	1.2
	10/3	150.0	16.0	-	-	88.0	3.0	4	18.0	M16	110.0	1.6
	16/3	150.0	16.0	-	-	88.0	3.0	4	18.0	M16	110.0	1.6
	25/3	150.0	20.0	-	-	88.0	3.0	4	18.0	M16	110.0	2.1
	40/3	150.0	20.0	-	-	88.0	3.0	4	18.0	M16	110.0	2.1
SABS 1123	600/3	130.0	10.0	-	-	80.0	3.0	4	14.0	M12	100.0	0.8
	1000/3	150.0	10.0	-	-	88.0	3.0	4	18.0	M16	110.0	1.0
	1600/3	150.0	10.0	-	-	88.0	3.0	4	18.0	M16	110.0	1.0
	2500/3	150.0	20.0	-	-	88.0	3.0	4	18.0	M16	110.0	2.1
	4000/3	150.0	20.0	-	-	88.0	3.0	4	18.0	M16	110.0	2.1
BS 10	D	6.3	6.3	-	-	-	-	4	14.2	12.7	98.4	1.2
	E	8.7	8.7	-	-	-	-	4	14.2	12.7	98.4	1.2
	F	12.7	12.7	-	-	-	-	4	17.5	15.9	104.8	1.3
	H	139.7	17.5	-	-	-	-	4	18	16	104.8	1.8
ASME B16.5	150	127.0	17.5	-	-	73.0	1.6	4	15.9	1/2"	98.4	1.3
	300	155.6	20.6	-	-	73.0	1.6	4	22.2	3/4"	114.3	2.5
	600	155.6	28.5	-	-	73.0	6.4	4	22.2	3/4"	114.3	-
ASME B16.5 WELD NECK	150	127	17.5	48.3	65	73	1.6	4	15.9	1/2"	98.4	1.3
	300	155.6	20.6	48.3	73	73	1.6	4	22.2	3/4"	114.3	2.5
	600	155.6	28.5	48.3	69.9	73	6.4	4	22.2	3/4"	114.3	-

50NB NOMINAL BORE (2") PIPE OD 60.3mm

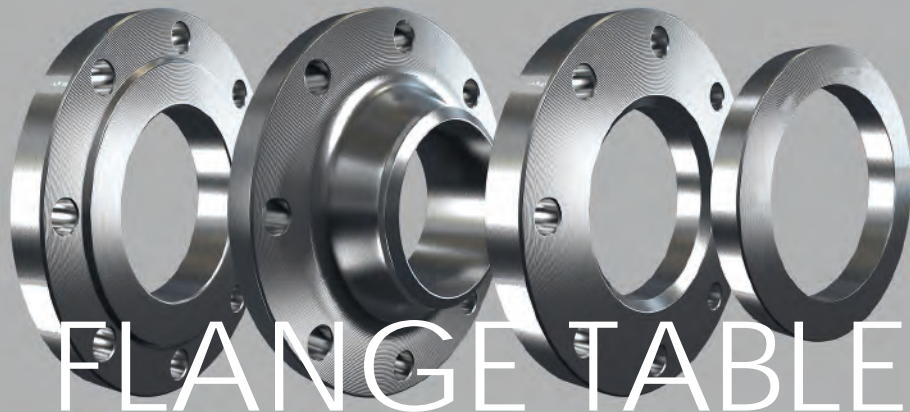
STANDARD	CLASS / TABLE	FLANGE OD	FLANGE THICKNESS B	HUB		RAISED RACE DIA (d3)	RAISED FACE Height	NO. OFF HOLES	HOLE DIA (d1)	BOLT SIZE	PCD	MASS KG
				A (mm)	X (mm)							
BS 4504	6/3	140.0	16.0	-	-	90.0	3.0	4	14.0	M12	110.0	1.3
	10/3	165.0	18.0	-	-	102.0	3.0	4	18.0	M16	125.0	2.2
	16/3	165.0	18.0	-	-	102.0	3.0	4	18.0	M16	125.0	2.2
	25/3	165.0	20.0	-	-	102.0	3.0	4	18.0	M16	125.0	2.5
	40/3	165.0	20.0	-	-	102.0	3.0	4	18.0	M16	125.0	2.5
SABS 1123	600/3	140.0	10.0	-	-	90.0	3.0	4	14.0	M12	110.0	0.8
	1000/3	165.0	10.0	-	-	102.0	3.0	4	18.0	M16	125.0	1.2
	1600/3	165.0	12.0	-	-	102.0	3.0	4	18.0	M16	125.0	1.5
	2500/3	165.0	20.0	-	-	102.0	3.0	4	18.0	M16	125.0	2.5
	4000/3	165.0	20.0	-	-	102.0	3.0	4	18.0	M16	125.0	2.5
BS 10	D	152.4	7.9	-	-	-	-	4	17.5	15.9	114.3	1.5
	E	152.4	9.5	-	-	-	-	4	17.5	15.9	114.3	1.5
	F	165.1	15.9	-	-	-	-	4	17.5	15.9	127.0	2.2
	H	165.1	19	-	-	-	-	4	18	16	127.0	2.5
ASME B16.5	150	152.4	19.1	-	-	92.1	1.6	4	19.1	5/8"	120.6	2.1
	300	165.1	22.22	-	-	92.1	1.6	8	19.1	5/8"	127.0	2.9
	600	165.1	31.7	-	-	92.1	6.4	8	19.1	5/8"	127.0	-
ASME B16.5 WELD NECK	150	152.4	19.1	60.5	77.7	92.1	1.6	4	19.1	5/8"	120.6	2.1
	300	165.1	22.22	60.4	84	92.1	1.6	8	19.1	5/8"	127	2.9
	600	165.1	31.7	60.5	84.1	92.1	6.4	8	19.1	5/8"	127	-

65NB NOMINAL BORE (2 1/2") PIPE OD 73.03mm

STANDARD	CLASS / TABLE	FLANGE OD	FLANGE THICKNESS B	HUB		RAISED RACE DIA (d3)	RAISED FACE Height	NO. OFF HOLES	HOLE DIA (d1)	BOLT SIZE	PCD	MASS KG
				A (mm)	X (mm)							
BS 4504	6/3	160.0	16.0	-	-	110.0	3.0	4	14.0	M12	130.0	1.6
	10/3	185.0	18.0	-	-	122.0	3.0	4	18.0	M16	145.0	2.7
	16/3	185.0	18.0	-	-	122.0	3.0	4	18.0	M16	145.0	2.7
	25/3	185.0	22.0	-	-	122.0	3.0	8	18.0	M16	145.0	3.2
	40/3	185.0	22.0	-	-	122.0	3.0	8	18.0	M16	145.0	3.2
SABS 1123	600/3	160.0	10.0	-	-	110.0	3.0	4	14.0	M12	130.0	1.0
	1000/3	185.0	12.0	-	-	122.0	3.0	4	18.0	M16	145.0	1.8
	1600/3	185.0	12.0	-	-	122.0	3.0	4	18.0	M16	145.0	1.8
	2500/3	185.0	22.0	-	-	122.0	3.0	8	18.0	M16	145.0	3.2
	4000/3	185.0	22.0	-	-	122.0	3.0	8	18.0	M16	145.0	3.2
BS 10	D	165.1	7.9	-	-	-	-	4	17.5	15.9	127.0	1.7
	E	165.1	10.3	-	-	-	-	4	17.5	15.9	127.0	1.7
	F	184.1	15.9	-	-	-	-	4	17.5	15.9	146.0	2.7
	H	184.1	19	-	-	-	-	8	18	16	146	3.5
ASME B16.5	150	177.8	22.2	-	-	104.8	1.6	4	19.0	5/8"	139.7	3.3
	300	190.5	25.4	-	-	104.8	1.6	8	22.2	3/4"	149.2	4.4
	600	190.5	34.9	-	-	104.8	6.4	8	22.2	3/4"	149.2	-
ASME B16.5 WELD NECK	150	177.8	22.2	73.2	90.4	105	1.6	4	19	5/8"	139.7	3.3
	300	190.5	25.4	73.1	100	105	1.6	8	22.2	3/4"	149.2	4.4
	600	190.5	34.9	73.2	100.1	105	6.4	8	22.2	3/4"	149.2	-

80NB NOMINAL BORE (3") PIPE OD 88.9mm

STANDARD	CLASS / TABLE	FLANGE OD	FLANGE THICKNESS B	HUB		RAISED RACE DIA (d3)	RAISED FACE Height	NO. OFF HOLES	HOLE DIA (d1)	BOLT SIZE	PCD	MASS KG
				A (mm)	X (mm)							
BS 4504	6/3	190.0	18.0	-	-	128.0	3.0	4	18.0	M16	150.0	2.6
	10/3	200.0	20.0	-	-	138.0	3.0	8	18.0	M16	160.0	3.3
	16/3	200.0	20.0	-	-	138.0	3.0	8	18.0	M16	160.0	3.3
	25/3	200.0	24.0	-	-	138.0	3.0	8	18.0	M16	160.0	4.0
	40/3	200.0	24.0	-	-	138.0	3.0	8	18.0	M16	160.0	4.0
SABS 1123	600/3	190.0	10.0	-	-	128.0	3.0	4	18.0	M16	150.0	1.4
	1000/3	200.0	12.0	-	-	138.0	3.0	8	18.0	M16	160.0	2.0
	1600/3	200.0	14.0	-	-	138.0	3.0	8	18.0	M16	160.0	2.3
	2500/3	200.0	22.0	-	-	138.0	3.0	8	18.0	M16	160.0	3.7
	4000/3	200.0	22.0	-	-	138.0	3.0	8	18.0	M16	160.0	3.7
BS 10	D	184.1	9.5	-	-	-	-	4	17.5	15.9	146.0	2.0
	E	184.1	11.1	-	-	-	-	4	17.5	15.9	146.0	2.0
	F	203.2	15.9	-	-	-	-	8	17.5	15.9	165.1	3.2
	H	203.2	22.2	-	-	-	-	8	18	16	165.1	4.5
ASME B16.5	150	190.5	23.8	-	-	127.0	1.6	4	19.0	5/8"	152.4	3.8
	300	209.6	28.6	-	-	127.0	1.6	8	22.2	3/4"	168.3	5.9
	600	209.6	38.1	-	-	168.3	6.4	8	22.2	3/4"	168.3	-
ASME B16.5 WELD NECK	150	190.5	23.8	88.9	108	127	1.6	4	19	5/8"	152.4	3.8
	300	209.6	28.6	88.9	117.3	127	1.6	8	22.2	3/4"	168.3	5.9
	600	209.6	38.1	88.9	117.3	168.3	6.4	8	22.2	3/4"	168.3	-



FLANGE TABLES

100NB NOMINAL BORE (4") PIPE OD 114.3mm

STANDARD	CLASS / TABLE	FLANGE OD	FLANGE THICKNESS B	HUB		RAISED RACE DIA (d3)	RAISED FACE Height	NO. OFF HOLES	HOLE DIA (d1)	BOLT SIZE	PCD	MASS KG
				A (mm)	X (mm)							
BS 4504	6/3	210.0	18.0	-	-	148.0	3.0	4	18.0	M16	170.0	2.9
	10/3	220.0	20.0	-	-	158.0	3.0	8	18.0	M16	180.0	3.6
	16/3	220.0	20.0	-	-	158.0	3.0	8	18.0	M16	180.0	3.6
	25/3	235.0	26.0	-	-	162.0	3.0	8	22.0	M20	190.0	5.7
	40/3	235.0	26.0	-	-	162.0	3.0	8	22.0	M20	190.0	5.7
SABS 1123	600/3	210.0	10.0	-	-	148.0	3.0	4	18.0	M16	170.0	1.6
	1000/3	220.0	12.0	-	-	158.0	3.0	8	18.0	M16	180.0	2.2
	1600/3	220.0	14.0	-	-	158.0	3.0	8	18.0	M16	180.0	2.5
	2500/3	235.0	25.0	-	-	162.0	3.0	8	22.0	M20	190.0	5.5
	4000/3	235.0	25.0	-	-	162.0	3.0	8	22.0	M20	190.0	5.5
BS 10	D	215.9	9.5	-	-	-	-	4	17.5	15.9	-	2.3
	E	215.9	13.7	-	-	-	-	4	17.5	15.9	-	2.3
	F	228.6	19.0	-	-	-	-	8	17.5	15.9	-	4.5
	H	228.6	25.4	-	-	-	-	8	18	16	190.5	6
ASME B16.5	150	228.6	23.8	-	-	157.2	1.6	8	19.0	5/8"	190.5	5.3
	300	254.0	31.8	-	-	157.2	1.6	8	22.2	3/4"	200.0	9.6
	600	273.1	44.4	-	-	157.2	6.4	8	25.4	7/8"	215.9	-
ASME B16.5 WELD NECK	150	228.6	23.8	114.3	134.9	157	1.6	8	19	5/8"	190.5	5.3
	300	254	31.8	114.3	146	157	1.6	8	22.2	3/4"	200	9.6
	600	273.1	44.4	114.3	152.4	157.2	6.4	8	25.4	3/4"	215.9	-

125NB NOMINAL BORE (5") PIPE OD 141.3mm

STANDARD	CLASS / TABLE	FLANGE OD	FLANGE THICKNESS B	HUB		RAISED RACE DIA (d3)	RAISED FACE Height	NO. OFF HOLES	HOLE DIA (d1)	BOLT SIZE	PCD	MASS KG
				A (mm)	X (mm)							
BS 4504	6/3	240.0	20.0	-	-	178.0	3.0	8	18.0	M16	200.0	3.9
	10/3	250.0	22.0	-	-	188.0	3.0	8	18.0	M16	210.0	5.0
	16/3	250.0	22.0	-	-	188.0	3.0	8	18.0	M16	210.0	5.0
	25/3	270.0	28.0	-	-	188.0	3.0	8	26.0	M24	220.0	7.7
	40/3	270.0	28.0	-	-	188.0	3.0	8	26.0	M24	220.0	7.7
SABS 1123	600/3	240.0	12.0	-	-	178.0	3.0	8	18.0	M16	200.0	2.3
	1000/3	250.0	14.0	-	-	188.0	3.0	8	18.0	M16	210.0	3.2
	1600/3	250.0	16.0	-	-	188.0	3.0	8	18.0	M16	210.0	3.6
	2500/3	270.0	28.0	-	-	188.0	3.0	8	26.0	M24	220.0	7.7
	4000/3	270.0	28.0	-	-	188.0	3.0	8	26.0	M24	220.0	7.7
BS 10	D	254.0	12.7	-	-	-	-	8	17.5	15.9	209.6	3.5
	E	254.0	14.3	-	-	-	-	8	17.5	15.9	209.6	3.8
	F	279.4	22.2	-	-	-	-	8	22.2	19	234.9	7.8
	H	279.4	28.6	-	-	-	-	8	25.4	20	235	10
ASME B16.5	150	254.0	23.8	-	-	185.7	1.6	8	22.2	3/4"	215.9	6.0
	300	279.4	34.9	-	-	185.7	1.6	8	22.2	3/4"	235.0	12.3
	600	330.2	50.7	-	-	185.7	6.4	8	28.6	1"	266.7	-
ASME B16.5 WELD NECK	150	254.0	23.8	141.2	163.6	185.7	1.6	8	22.2	3/4"	215.9	6.0
	300	279.4	34.9	141.2	177.8	185.7	1.6	8	22.2	3/4"	235.0	12.3
	600	330.2	50.7	141.2	189	185.7	6.4	8	28.6	1"	266.7	-

150NB NOMINAL BORE (6") PIPE OD 168.3mm

STANDARD	CLASS / TABLE	FLANGE OD	FLANGE THICKNESS B	HUB		RAISED RACE DIA (d3)	RAISED FACE Height	NO. OFF HOLES	HOLE DIA (d1)	BOLT SIZE	PCD	MASS KG
				A (mm)	X (mm)							
BS 4504	6/3	265.0	20.0	-	-	202.0	3.0	8	18.0	M16	225.0	4.4
	10/3	285.0	22.0	-	-	212.0	3.0	8	22.0	M20	240.0	6.0
	16/3	285.0	22.0	-	-	212.0	3.0	8	22.0	M20	240.0	6.0
	25/3	300.0	30.0	-	-	218.0	3.0	8	26.0	M24	250.0	9.7
	40/3	300.0	30.0	-	-	218.0	3.0	8	26.0	M24	250.0	9.7
SABS 1123	600/3	265.0	12.0	-	-	202.0	3.0	8	18.0	M16	225.0	2.6
	1000/3	285.0	16.0	-	-	212.0	3.0	8	22.0	M20	240.0	4.4
	1600/3	285.0	18.0	-	-	212.0	3.0	8	22.0	M20	240.0	4.9
	2500/3	300.0	30.0	-	-	218.0	3.0	8	26.0	M24	250.0	9.7
	4000/3	300.0	30.0	-	-	218.0	3.0	8	26.0	M24	250.0	9.7
BS 10	D	279.4	12.7	-	-	-	-	8	17.5	15.9	235.0	3.9
	E	279.4	17.5	-	-	-	-	8	22.2	19	235.0	5.4
	F	304.8	22.2	-	-	-	-	12	22.2	19	260.0	8.7
	H	304.8	28.6	-	-	-	-	12	25.4	20	260.0	11
ASME B16.5	150	279.4	25.4	-	-	215.9	1.6	8	22.2	3/4"	241.3	7.4
	300	317.5	36.5	-	-	215.9	1.6	12	22.2	3/4"	269.9	15.6
	600	355.6	53.9	-	-	215.9	6.4	12	28.6	1"	292.1	-
ASME B16.5 WELD NECK	150	279.4	25.4	168.4	192	216	1.6	8	22.2	3/4"	241.3	7.4
	300	317.5	36.5	168.4	206.2	216	1.6	12	22.2	3/4"	269.9	15.6
	600	355.6	53.9	168.4	222.3	216	6.4	12	28.6	1"	292.1	-

200NB NOMINAL BORE (8") PIPE OD 219.08mm

STANDARD	CLASS / TABLE	FLANGE OD	FLANGE THICKNESS B	HUB		RAISED RACE DIA (d3)	RAISED FACE Height	NO. OFF HOLES	HOLE DIA (d1)	BOLT SIZE	PCD	MASS KG
				A (mm)	X (mm)							
BS 4504	6/3	320	22.0	-	-	258.0	3.0	8	18.0	M16	280.0	6.4
	10/3	340	24.0	-	-	268.0	3.0	8	22.0	M20	295.0	8.7
	16/3	340	24.0	-	-	268.0	3.0	12	22.0	M20	295.0	8.4
	25/3	360	28.0	-	-	278.0	3.0	12	26.0	M24	310.0	12.0
	40/3	375	34.0	-	-	285.0	3.0	12	30.0	M27	320.0	16.0
SABS 1123	600/3	320.0	14.0	-	-	258.0	3.0	8	18.0	M16	280.0	6.2
	1000/3	340.0	18.0	-	-	268.0	3.0	8	22.0	M20	295.0	6.5
	1600/3	340.0	22.0	-	-	268.0	3.0	12	22.0	M20	295.0	7.7
	2500/3	360.0	28.0	-	-	278.0	3.0	12	26.0	M24	310.0	12.0
	4000/3	375.0	32.0	-	-	285.0	3.0	12	26.0	M24	320.0	15.1
BS 10	D	336.6	12.7	-	-	-	-	8	17.5	15.9	292.1	4.9
	E	336.6	19.0	-	-	-	-	8	22.2	19	292.1	7.6
	F	368.3	25.4	-	-	-	-	12	22.2	19	323.9	13.4
	H	368.3	31.8	-	-	-	-	12	25.4	20	323.8	17
ASME B16.5	150	342.9	28.6	-	-	269.9	1.6	8	22.2	3/4"	298.4	12.1
	300	381.0	41.3	-	-	269.9	1.6	12	25.4	7/8"	330.2	24.2
	600	419.1	49.5	-	-	269.9	6.4	12	31.7	11/8"	349.2	-
ASME B16.5 WELD NECK	150	342.9	28.6	219.2	246.1	269.9	1.6	8	22.2	3/4"	298.4	12.1
	300	381	41.3	219.2	260.3	269.9	1.6	12	25.4	7/8"	330.2	24.2
	600	419.1	49.5	219.2	273.1	269.9	6.4	12	31.7	11/8"	349.2	-

FLANGE TABLES

250NB NOMINAL BORE (10") PIPE OD 273.05mm

STANDARD	CLASS / TABLE	FLANGE OD	FLANGE THICKNESS (B)	HUB		RAISED FACE DIA (d3)	RAISED FACE Height	NO. OFF HOLES	HOLE DIA (d1)	BOLT SIZE	PCD	MASS KG
				A (mm)	X (mm)							
BS 4504	6/3	375.0	24.0	-	-	312.0	3.0	12	18.0	M16	335.0	8.5
	10/3	395.0	26.0	-	-	320.0	3.0	12	22.0	M20	350.0	11.0
	16/3	405.0	26.0	-	-	320.0	3.0	12	26.0	M24	355.0	12.0
	25/3	425.0	32.0	-	-	335.0	3.0	12	30.0	M27	370.0	17.0
	40/3	450.0	42.0	-	-	345.0	3.0	12	33.0	M30	385.0	28.5
SABS 1123	600/3	375.0	16.0	-	-	312.0	3.0	12	18.0	M16	335.0	5.7
	1000/3	395.0	20.0	-	-	320.0	3.0	12	22.0	M20	350.0	8.5
	1600/3	405.0	25.0	-	-	320.0	3.0	12	26.0	M24	355.0	11.5
	2500/3	425.0	30.0	-	-	335.0	3.0	12	26.0	M24	370.0	16.4
	4000/3	450.0	38.0	-	-	345.0	3.0	12	33.0	M30	385.0	25.8
BS 10	D	406.4	15.9	-	-	-	-	8	22.2	19	335.6	8.7
	E	406.4	22.2	-	-	-	-	12	22.2	19	335.6	12.1
	F	431.8	28.6	-	-	-	-	12	25.4	22.2	381.0	19.2
	H	431.8	34.9	-	-	-	-	12	25.4	22	381	24.5
ASME B16.5	150	406.4	30.2	-	-	323.8	1.6	12	25.4	7/8"	361.9	16.5
	300	444.5	47.6	-	-	323.8	1.6	16	28.6	1"	387.3	37.1
	600	508.0	69.8	-	-	323.8	6.4	16	34.9	1 1/4"	431.8	-
ASME B16.5 WELD NECK	150	406.4	30.2	273.1	304.8	323.8	1.6	12	25.4	7/8"	361.9	16.5
	300	444.5	47.6	273	320.5	323.8	1.6	16	28.6	1"	387.3	37.1
	600	508	69.8	273.1	342.9	323.8	6.4	16	34.9	1 1/4"	431.8	-

300NB NOMINAL BORE (12") PIPE OD 323.85mm

STANDARD	CLASS / TABLE	FLANGE OD	FLANGE THICKNESS (B)	HUB		RAISED FACE DIA (d3)	RAISED FACE Height	NO. OFF HOLES	HOLE DIA (d1)	BOLT SIZE	PCD	MASS KG
				A (mm)	X (mm)							
BS 4504	6/3	440.0	24.0	-	-	365.0	4.0	12	22.0	M20	395.0	11.0
	10/3	445.0	26.0	-	-	370.0	4.0	12	22.0	M20	400.0	12.5
	16/3	460.0	28.0	-	-	378.0	4.0	12	26.0	M24	410.0	15.5
	25/3	485.0	38.0	-	-	395.0	4.0	16	30.0	M27	430.0	25.5
	40/3	515.0	50.0	-	-	410.0	4.0	16	33.0	M30	450.0	42.0
SABS 1123	600/3	440.0	20.0	-	-	365.0	4.0	12	22.0	M20	395.0	9.2
	1000/3	445.0	22.0	-	-	370.0	4.0	12	22.0	M20	400.0	10.6
	1600/3	460.0	28.0	-	-	378.0	4.0	12	26.0	M24	410.0	15.5
	2500/3	485.0	32.0	-	-	395.0	4.0	16	26.0	M24	430.0	21.5
	4000/3	515.0	40.0	-	-	410.0	4.0	16	33.0	M30	450.0	33.6
BS 10	D	457.2	19.0	-	-	-	-	12	22.2	19	406.4	12.1
	E	457.2	25.4	-	-	-	-	12	25.4	22.2	406.4	16.1
	F	489.0	31.8	-	-	-	-	16	25.4	22.2	438.2	25.5
	H	489	41.3	-	-	-	-	16	22.2	22	438.2	31
ASME B16.5	150	482.6	31.8	-	-	381.0	1.6	12	25.4	7/8"	431.8	26.2
	300	520.7	50.8	-	-	382.0	1.6	16	31.7	1 1/8"	450.8	50
	600	558.8	73.0	-	-	381.0	6.4	20	34.9	1 1/4"	488.9	-
ASME B16.5 WELD NECK	150	482.6	31.8	323.8	365.3	381	1.6	12	25.4	7/8"	431.8	26.2
	300	520.7	50.8	323.8	374.6	382	1.6	16	31.7	1 1/8"	450.8	50
	600	558.8	73	323.8	400.1	381	6.4	20	34.9	1 1/4"	448.9	-

350NB NOMINAL BORE (14") PIPE OD 355.6mm

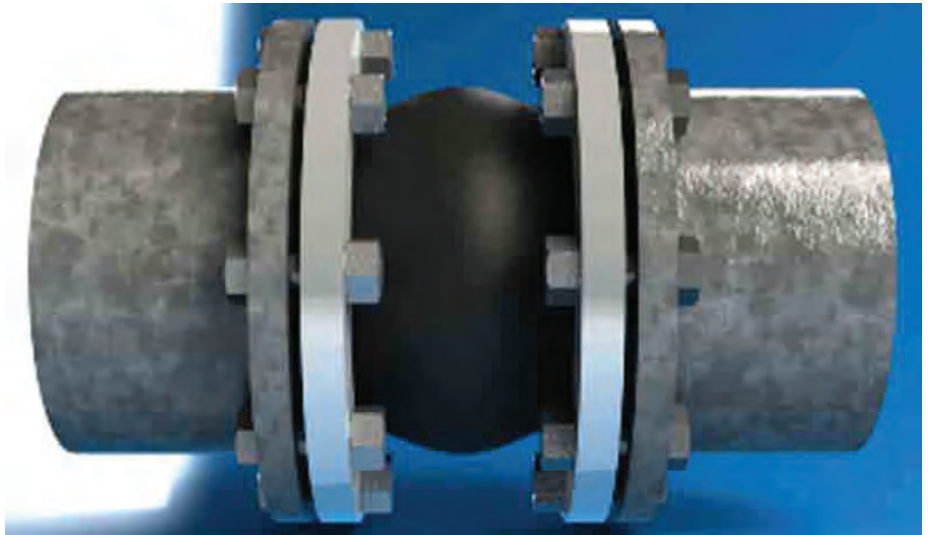
STANDARD	CLASS / TABLE	FLANGE OD	FLANGE THICKNESS (B)	HUB		RAISED FACE DIA (d3)	RAISED FACE Height	NO. OFF HOLES	HOLE DIA (d1)	BOLT SIZE	PCD	MASS KG
				A (mm)	X (mm)							
BS 4504	6/3	490.0	26.0	-	-	415.0	4.0	12	22.0	M20	445.0	15.5
	10/3	505.0	28.0	-	-	430.0	4.0	16	22.0	M24	460.0	19.5
	16/3	520.0	32.0	-	-	438.0	4.0	16	26.0	M24	470.0	24.5
	25/3	555.0	42.0	-	-	450.0	4.0	16	33.0	M30	490.0	40.5
	40/3	580.0	56.0	-	-	465.0	4.0	16	36.0	M33	510.0	63.0
SABS 1123	600/3	490.0	22.0	-	-	415.0	4.0	12	22.0	M20	445.0	13.1
	1000/3	505.0	25.0	-	-	430.0	4.0	16	22.0	M24	460.0	17.4
	1600/3	520.0	30.0	-	-	438.0	4.0	16	26.0	M24	470.0	23.0
	2500/3	555.0	35.0	-	-	450.0	4.0	16	33.0	M30	490.0	33.8
	4000/3	580.0	45.0	-	-	465.0	4.0	16	33.0	M30	510.0	50.6
BS 10	D	527.1	22.2	-	-	-	-	12	25.4	22.2	469.9	18.8
	E	527.1	28.6	-	-	-	-	12	25.4	22.2	469.9	25.9
	F	552.5	34.9	-	-	-	-	16	28.6	25.4	495.3	36.2
	H	552.4	47.6	-	-	-	-	16	28.6	24	495.3	-
ASME B16.5	150	533.4	34.9	-	-	412.7	1.6	12	28.6	1"	476.2	36.0
	300	584.2	54.0	-	-	412.7	1.6	20	31.7	1 1/8"	514.3	-
	600	603.2	76.2	-	-	412.0	6.4	20	38.1	-	527.0	-
ASME B16.5 WELD NECK	150	533.4	34.9	355.6	400.1	413	1.6	12	28.6	1"	476.2	36.0
	300	584.2	54	355.6	425.4	413	1.6	20	31.7	1 1/8"	514.3	-
	600	603.2	76.2	355.6	431.8	412	6.4	20	38.1	-	527.0	-

400NB NOMINAL BORE (16") PIPE OD 406.4mm

STANDARD	CLASS / TABLE	FLANGE OD	FLANGE THICKNESS (B)	HUB		RAISED FACE DIA (d3)	RAISED FACE Height	NO. OFF HOLES	HOLE DIA (d1)	BOLT SIZE	PCD	MASS KG
				A (mm)	X (mm)							
BS 4504	6/3	540.0	28.0	-	-	465.0	4.0	16	22.0	M20	495.0	19.0
	10/3	565.0	32.0	-	-	482.0	4.0	16	26.0	M24	515.0	26.5
	16/3	580.0	36.0	-	-	490.0	4.0	16	30.0	M27	525.0	33.0
	25/3	620.0	46.0	-	-	505.0	4.0	16	36.0	M33	550.0	54.0
	40/3	660.0	64.0	-	-	535.0	4.0	16	39.0	M36	585.0	94.0
SABS 1123	600/3	540.0	22.0	-	-	465.0	4.0	16	22.0	M20	495.0	14.9
	1000/3	565.0	25.0	-	-	482.0	4.0	16	26.0	M24	515.0	20.7
	1600/3	580.0	35.0	-	-	490.0	4.0	16	26.0	M24	525.0	32.1
	2500/3	620.0	40.0	-	-	505.0	4.0	16	33.0	M30	550.0	47.0
	4000/3	660.0	50.0	-	-	535.0	4.0	16	39.0	M36	585.0	73.4
BS 10	D	577.9	22.2	-	-	-	-	12	25.4	22.2	520.7	22.3
	E	577.9	31.8	-	-	-	-	12	25.4	22.2	520.9	32.6
	F	609.6	41.1	-	-	-	-	20	28.6	25.4	552.5	51.3
	H	609.6	54	-	-	-	-	20	28.6	24	552.5	-
ASME B16.5	150	596.9	36.5	-	-	469.9	1.6	16	28.6	1"	539.7	46.0
	300	647.7	57.2	-	-	469.9	1.6	20	34.9	1 1/4"	571.5	-
	600	685.8	82.5	-	-	469.9	6.4	20	41.3	1 1/2"	603.2	-
ASME B16.5 WELD NECK	150	596.9	36.5	406.4	457.2	469.9	1.6	16	28.6	1"	539.7	46
	300	647.7	57.2	406.4	482.6	469.9	1.6	20	34.9	1 1/4"	571.5	-
	600	685.8	82.5	406.4	495.3	469.9	6.4	20	41.3	1 1/2"	603.2	-



FLANGE TABLES



450NB NOMINAL BORE (18") PIPE OD 457.2mm

STANDARD	CLASS / TABLE	FLANGE OD	FLANGE THICKNESS B)	HUB		RAISED RACE DIA (d3)	RAISED FACE Height	NO. OFF HOLES	HOLE DIA (d1)	BOLT SIZE	PCD	MASS KG
				A (mm)	X (mm)							
BS 4504	6/3	595.0	30.0	-	-	520.0	4.0	16	22.0	M20	550.0	-
	10/3	615.0	36.0	-	-	532.0	4.0	20	26.0	M24	565.0	-
	16/3	640.0	40.0	-	-	550.0	4.0	20	30.0	M27	585.0	-
	25/3	670.0	52.0	-	-	555.0	4.0	20	36.0	M33	600.0	-
	40/3	685.0	68.0	-	-	560.0	4.0	20	39.0	M36	610.0	-
SABS 1123	600/3	595.0	25.0	-	-	520.0	4.0	16	22.0	M20	550.0	-
	1000/3	615.0	30.0	-	-	532.0	4.0	20	26.0	M24	565.0	-
	1600/3	640.0	40.0	-	-	550.0	4.0	20	36.0	M24	585.0	-
	2500/3	670.0	45.0	-	-	555.0	4.0	20	33.0	M30	600.0	-
	4000/3	685.0	60.0	-	-	575.0	4.0	20	39.0	M36	610.0	-
BS 10	D	641.4	25.4	-	-	-	-	12	25.4	22.2	584.2	30.8
	E	641.4	34.9	-	-	-	-	16	25.4	22.2	584.2	42.9
	F	673.1	44.5	-	-	-	-	20	31.8	28.6	609.9	64.7
	H	673.1	60.3	-	-	-	-	20	33	30	609.6	-
ASME B16.5	150	635.0	39.7	-	-	533.4	1.6	16	31.7	1 1/8"	577.8	49.0
	300	711.2	60.3	-	-	533.4	1.6	24	34.9	1 1/4"	628.6	-
	600	742.9	88.9	-	-	533.4	6.4	20	44.4	1 5/8"	654.0	-
ASME B16.5 WELD NECK	150	635.0	39.7	457.2	505	533.4	1.6	16	31.7	1 1/8"	577.8	49.0
	300	711.2	60.3	457.2	533.4	533.4	1.6	24	34.9	1 1/4"	628.6	-
	600	742.9	88.9	457.2	546.1	533.4	6.4	20	44.4	1 5/8"	654.0	-

500NB NOMINAL BORE (20") PIPE OD 508mm

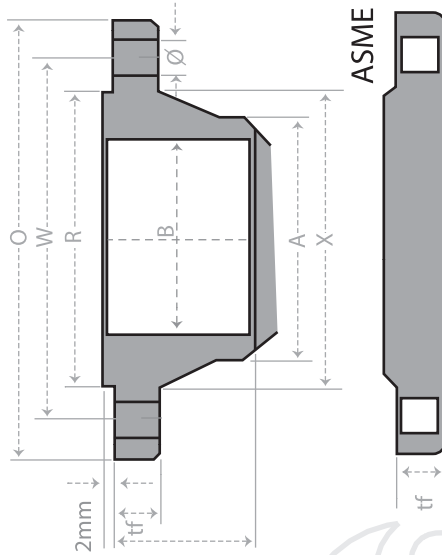
STANDARD	CLASS / TABLE	FLANGE OD	FLANGE THICKNESS B)	HUB		RAISED RACE DIA (d3)	RAISED FACE Height	NO. OFF HOLES	HOLE DIA (d1)	BOLT SIZE	PCD	MASS KG
				A (mm)	X (mm)							
BS 4504	6/3	645.0	30.0	-	-	570.0	4.0	20	22.0	M20	600.0	25.5
	10/3	670.0	38.0	-	-	585.0	4.0	20	26.0	M24	620.0	39.0
	16/3	715.0	44.0	-	-	610.0	4.0	20	33.0	M30	650.0	60.0
	25/3	730.0	58.0	-	-	615.0	4.0	20	36.0	M33	660.0	86.0
	40/3	755.0	72.0	-	-	615.0	4.0	20	42.0	M39	670.0	120.0
SABS 1123	600/3	645.0	25.0	-	-	570.0	4.0	20	22.0	M20	600.0	21.3
	1000/3	670.0	32.0	-	-	585.0	4.0	20	26.0	M24	620.0	32.8
	1600/3	715.0	40.0	-	-	610.0	4.0	20	33.0	M30	650.0	54.6
	2500/3	730.0	50.0	-	-	615.0	4.0	20	33.0	M30	660.0	74.1
	4000/3	755.0	70.0	-	-	615.0	4.0	20	39.0	M36	670.0	116.7
BS 10	D	704.9	28.6	-	-	-	-	16	25.4	22.2	641.4	41.1
	E	704.9	38.1	-	-	-	-	16	25.4	22.2	641.4	55.8
	F	736.6	50.8	-	-	-	-	24	31.7	28.6	673.1	87.1
	H	736.6	66.7	-	-	-	-	24	33	30	673.1	-
ASME B16.5	150	698.5	42.9	-	-	584.2	1.6	20	31.7	1 1/8"	635.0	61.9
	300	774.7	63.5	-	-	584.2	1.6	24	34.9	1 1/4"	685.8	-
	600	812.8	95.2	-	-	584.2	6.4	24	44.4	1 5/8"	723.9	-
ASME B16.5 WELD NECK	150	698.5	42.9	508	558.8	584.2	1.6	20	31.7	1 1/8"	635	61.9
	300	774.7	63.5	508	587.2	584.2	1.6	24	34.9	1 1/4"	685.8	-
	600	812.8	95.2	508	609.6	584.2	6.4	24	44.4	1 5/8"	723.9	-

600NB NOMINAL BORE (24") PIPE OD 609.6mm

STANDARD	CLASS / TABLE	FLANGE OD	FLANGE THICKNESS B)	HUB		RAISED RACE DIA (d3)	RAISED FACE Height	NO. OFF HOLES	HOLE DIA (d1)	BOLT SIZE	PCD	MASS KG
				A (mm)	X (mm)							
BS 4504	6/3	755.0	32.0	-	-	670.0	5.0	20	26.0	M24	705.0	33.0
	10/3	780.0	42.0	-	-	685.0	5.0	20	30.0	M27	725.0	53.0
	16/3	840.0	52.0	-	-	725.0	5.0	20	36.0	M33	770.0	94.0
	25/3	845.0	66.0	-	-	720.0	5.0	20	39.0	M36	770.0	120.0
	40/3	-	-	-	-	-	-	-	-	-	-	-
SABS 1123	600/3	755.0	30.0	-	-	670.0	5.0	20	M24	M24	705.0	30.9
	1000/3	780.0	38.0	-	-	685.0	5.0	20	M24	M24	725.0	48.0
	1600/3	840.0	50.0	-	-	725.0	5.0	20	M30	M30	770.0	90.4
	2500/3	845.0	60.0	-	-	720.0	5.0	20	M36	M36	770.0	109.1
	4000/3	-	-	-	-	-	5.0	20	-	-	-	-
BS 10	D	825.5	31.8	-	-	-	-	16	25.4	25.4	755.7	60.3
	E	825.5	47.6	-	-	-	-	16	28.6	28.6	755.7	89.3
	F	850.9	57.2	-	-	-	-	24	31.8	31.8	781.1	122.8
	H	850.9	76.2	-	-	-	-	24	33	30	781	-
ASME B16.5	150	812.8	47.6	-	-	692.1	1.6	20	34.9	1 1/4"	749.3	86.9
	300	914.4	69.8	-	-	692.1	1.6	24	41.3	1 1/2"	812.8	-
	600	939.8	107.9	-	-	692.1	6.4	24	50.8	1 7/8"	838.2	-
ASME B16.5 WELD NECK	150	812	47.6	609.6	663.4	692	1.6	20	34.9	1 1/4"	749.3	86.9
	300	914.4	69.8	609.6	701.5	692	1.6	24	41.3	1 1/2"	812.8	-
	600	939.8	107.8	609.6	717.6	692	6.4	24	50.8	1 7/8"	838.2	-



WELD NECK & BLIND FLANGES



ASME B16.47 SERIES A EQUIVALENT TP MSS SP-44

650NB NOMINAL BORE 26" - PIPE OD 660.4mm

STANDARD	CLASS / TABLE	OD	B (mm)	FLANGES		THICKNESS		LENGHT THRU HUB		HUB		DRILLING				MIN FILLET RADIUS	MASS (kg)
SERIES A	150	870		66.7	-	119	660.4	676	749	24	34.9	806.4	10	-	-	-	-
	300	970		77.8	82.6	183	660.4	721	749	28	44.3	876.3	10	-	-	-	-
	600	1015		108	125.5	222	660.4	748	749	28	50.8	914.4	13	-	-	-	-
	900	1085		139.7	160.4	286	660.4	775	749	20	73	952.5	11	-	-	-	-
SERIES B	150	785		39.8	43	87	661.9	676.2	711	36	22.2	744.5	10	63			
	300	865		87.4	87.4	168	665.2	702	737	32	34.9	803.3	14	181			

B(mm) TO BE SPECIFIED BY PURCHASER

ASME B16.47 SERIES B (REPLACES API STANDARD 605

700NB NOMINAL BORE 28" - PIPE OD 711mm

STANDARD	CLASS / TABLE	OD	B (mm)	FLANGES		THICKNESS		LENGHT THRU HUB		HUB		DRILLING				MIN FILLET RADIUS	MASS (kg)
SERIES A	150	925		69.9	-	124	711.2	727	800	28	34.9	863.6	11	-	-	-	-
	300	1035		84.2	88.9	195	711.2	775	800	28	44.4	939.8	11	-	-	-	-
	600	1075		111.2	131.8	235	711.2	803	800	28	54	965.2	13	-	-	-	-
	900	1170		142.9	171.5	298	712.2	832	800	20	79.4	1022.4	13	-	-	-	-
SERIES B	150	835		43	46.2	94	712.7	735	762	40	22.2	795.3	10	74			
	300	920		87.4	87.4	148	716	756	787	36	34.9	857.2	14	203			

750NB NOMINAL BORE 30" - PIPE OD 762mm

STANDARD	CLASS / TABLE	OD	B (mm)	FLANGES		THICKNESS		LENGHT THRU HUB		HUB		DRILLING				MIN FILLET RADIUS	MASS (kg)
SERIES A	150	985		73.1	-	135	762	781	857	28	34.9	914.4	11	-	-	-	-
	300	1090		90.5	93.7	208	762	827	857	28	47.6	997	11	-	-	-	-
	600	1130		114.3	139.7	248	762	862	857	28	54	1022.3	13	-	-	-	-
	900	1230		149.3	182.6	311	762	889	857	20	79.4	1085.8	13	-	-	-	-
SERIES B	150	885		43	49.3	98	763.5	787	813	44	22.2	846.1	10	80			
	300	990		92.1	92.1	156	768.4	813	845	36	38.1	920.8	14	268			

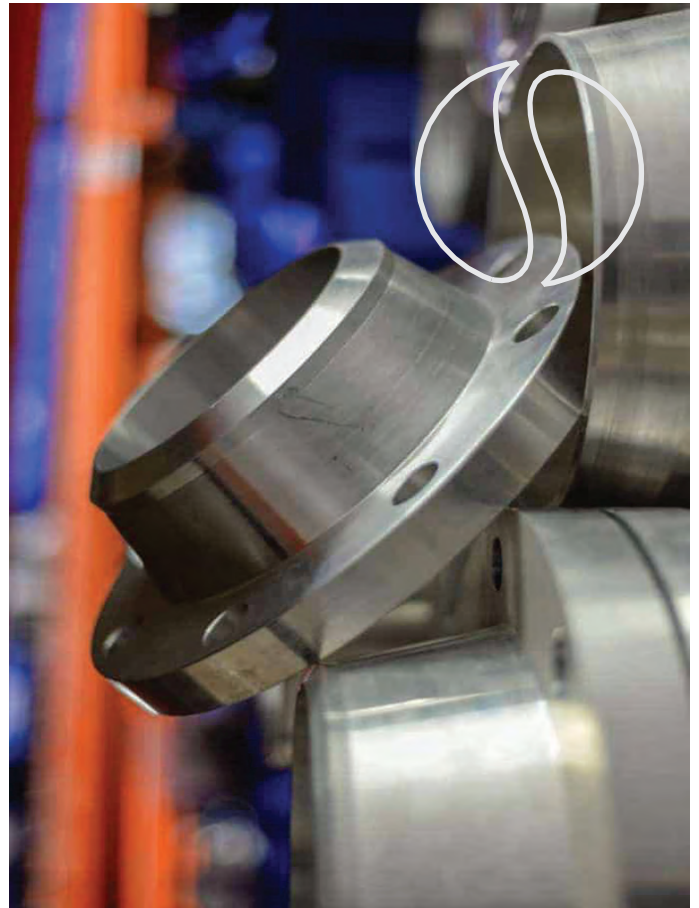
WELD NECK & BLIND FLANGES



ASME B16.47 SERIES B (REPLACES API STANDARD 605)

900NB NOMINAL BORE 36" - PIPE OD 914.40mm

STANDARD	CLASS / TABLE	OD	B (mm)	FLANGES		LENGTH THRU HUB	HUB		DRILLING				MIN RADIUS	MASS (kg)
				WNF	BLIND		A	X	RAISED FACE	NO. HOLES	HOLE DIA (D1)	PCD		
SERIES A	150	1170		88.9	-	156	914.4	933	1022	32	41.3	1085.8	13	-
	300	1270		103.2	109.6	240	914.4	991	1022	32	54	1168.4	13	-
	600	1315		123.9	162	283	914.4	1032	1022	32	66.7	1193.8	14	-
	900	1460		171.5	214.4	362	914.4	1064	1022	20	92.1	1289	14	-
SERIES B	150	1055		50.9	57.3	116	915.9	945	972	44	25.4	1009.6	10	-
	300	1170		101.6	101.6	179	920.8	965	1010	32	44.4	1089	16	405



ASME B16.47 SERIES A EQUIVALENT TP MSS SP-44

800NB NOMINAL BORE 32" - PIPE OD 812.80mm

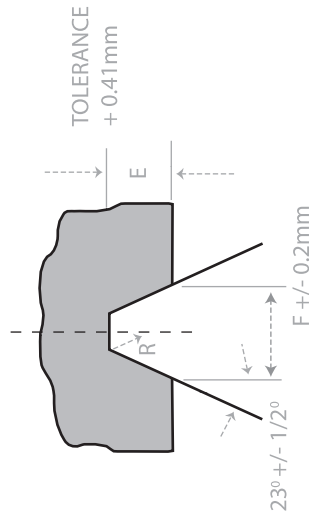
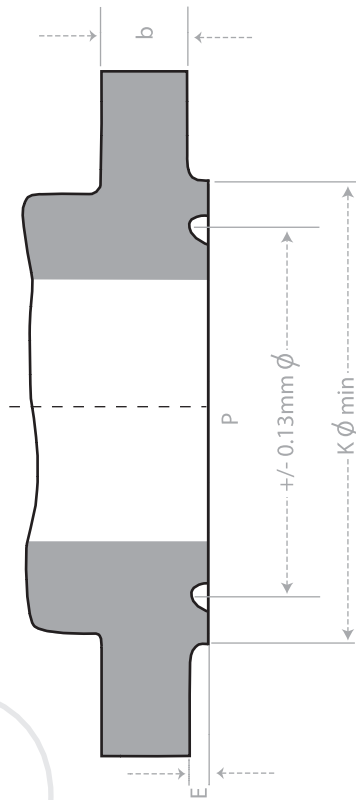
STANDARD	CLASS / TABLE	OD	B (mm)	FLANGES		LENGTH THRU HUB	HUB		DRILLING				MIN FILLET RADIUS	MASS (kg)
				WNF	BLIND		A	X	RAISED FACE	NO. HOLES	HOLE DIA (D1)	PCD		
SERIES A	150	1060		79.4	-	143	812.8	832	914	28	41.3	977.9	11	-
	300	1150		96.9	98.5	221	812.8	881	914	28	50.8	1054.1	11	-
	600	1195		117.5	147.7	260	812.8	918	914	28	60.3	1079.5	13	-
	900	1315		158.8	193.7	330	812.8	946	914	20	85.7	1155.7	13	-
SERIES B	150	940		44.6	52.5	106	814.3	840	864	48	22.2	900.1	10	92
	300	1055		101.6	101.6	167	819.2	864	902	32	41.3	977.9	16	330

850NB NOMINAL BORE 34" - PIPE OD 863.6mm

STANDARD	CLASS / TABLE	OD	B (mm)	FLANGES		LENGHT THRU HUB	HUB		DRILLING				MIN FILLET RADIUS	MASS (kg)
				WNF	BLIND		A	X	RAISED FACE	NO. HOLES	HOLE DIA (D1)	PCD		
SERIES A	150	1110		81	-	148	863.6	883	965	32	41.3	1028.7	13	-
	300	1205		100.1	103.2	230	863.6	937	965	28	50.8	1104.9	13	-
	600	1245		120.7	154	270	863.6	973	965	28	60.3	1130.3	14	-
	900	1395		165.1	204.8	349	863.6	1006	965	20	92.1	1225.6	14	-
SERIES B	150	1005		47.7	55.7	109	865.1	892	921	40	25.4	957.3	10	113
	300	1110		101.6	101.6	171	870	918	953	36	41.3	1031.9	16	357

B(mm) TO BE SPECIFIED BY PURCHASER

FORGED FLANGES: RING JOINT FACINGS



15NB NOMINAL BORE (1/2") PIPE OD 21.3mm

NOMINAL SIZE	CLASS NPS	GROOVE NO.	GROOVE DIMENSIONS				DIAMETER OF RAISED FACE K				
			PITCH DIA (mm) P	DEPTH (mm) E	WIDTH (mm)	RAD AT BOTTOM MAX R	CLASS 150	CLASS 300 /400 /600	CLASS 900	CLASS 1500	CLASS 2500
-	150	-	-	-	-	-	-	-	-	-	-
1/2"	300	R11	34.14	5.54	7.14	0.8	-	51	-	-	-
-	400	-	-	-	-	-	-	-	-	-	-
1/2"	600	R11	34.14	5.54	7.14	0.8	-	51	-	-	-
-	900	-	-	-	-	-	-	-	-	-	-
1/2"	1500	R12	39.67	6.35	8.74	0.8	-	-	-	60.5	-
1/2"	2500	R13	42.88	6.35	8.74	0.8	-	63.6	-	-	65

20NB NOMINAL BORE (3/4") PIPE OD 21.3mm

NOMINAL SIZE	CLASS NPS	GROOVE NO.	GROOVE DIMENSIONS				DIAMETER OF RAISED FACE K				
			PITCH DIA (mm) P	DEPTH (mm) E	WIDTH (mm)	RAD AT BOTTOM MAX R	CLASS 150	CLASS 300 /400 /600	CLASS 900	CLASS 1500	CLASS 2500
-	150	-	-	-	-	-	-	-	-	-	
3/4"	300	R13	42.88	6.35	8.74	0.8	-	63.6	-	-	
-	400	-	-	-	-	-	-	-	-	-	
3/4"	600	R13	42.88	6.35	8.74	0.8	-	63.6	-	-	
-	900	-	-	-	-	-	-	-	-	-	
3/4"	1500	R14	44.45	6.35	8.74	0.8	-	-	-	66.5	
3/4"	2500	R16	50.8	6.35	8.74	0.8	-	-	-	-	
										73	

FOR RING JOINTS WITH LAPPED FLANGES IN CLASS 300 AND 600, RING AND GROOVE NUMBER R30 IS USED INSTEAD OF R31

FORGED FLANGES: RING JOINT FACINGS



25NB NOMINAL BORE (1") PIPE OD 33.4mm

NOMINAL SIZE	CLASS NPS	GROOVE NO.	GROOVE DIMENSIONS				DIAMETER OF RAISED FACE K				
			PITCH DIA (mm) P	DEPTH (mm) F	WIDTH (mm)	RAD AT BOTTOM MAX R	CLASS 150	CLASS 300 /400 /600	CLASS 900	CLASS 1500	CLASS 2500
1"	150	R15	47.63	6.35	8.74	0.8	63.5	-	-	-	-
1"	300	R16	50.8	6.35	8.74	0.8	-	70	-	-	-
-	400	-	-	-	-	-	-	-	-	-	-
1"	600	R16	50.8	6.35	8.74	0.8	-	70	-	-	-
-	900	-	-	-	-	-	-	-	-	-	-
1"	1500	R16	50.8	6.35	8.74	0.8	-	-	-	71.5	-
1"	2500	R18	60.33	6.35	8.74	0.8	-	-	-	-	82.5

32NB NOMINAL BORE (1 1/4") PIPE OD 42.16mm

NOMINAL SIZE	CLASS NPS	GROOVE NO.	GROOVE DIMENSIONS				DIAMETER OF RAISED FACE K				
			PITCH DIA (mm) P	DEPTH (mm) F	WIDTH (mm)	RAD AT BOTTOM MAX R	CLASS 150	CLASS 300 /400 /600	CLASS 900	CLASS 1500	CLASS 2500
1 1/4"	150	R17	57.15	6.35	8.74	0.8	73	-	-	-	-
1 1/4"	300	R18	60.33	6.35	8.74	0.8	-	79.5	-	-	-
-	400	-	-	-	-	-	-	-	-	-	-
1 1/4"	600	R18	60.33	6.35	8.74	0.8	-	79.5	-	-	-
-	900	-	-	-	-	-	-	-	-	-	-
1 1/4"	1500	R18	60.33	6.35	8.74	0.8	-	-	-	61	-
1 1/4"	2500	R21	72.23	7.92	11.91	0.8	-	-	-	-	102

40NB NOMINAL BORE (1 1/2") PIPE OD 48.26mm

NOMINAL SIZE	CLASS NPS	GROOVE NO.	GROOVE DIMENSIONS				DIAMETER OF RAISED FACE K				
			PITCH DIA (mm) P	DEPTH (mm) F	WIDTH (mm)	RAD AT BOTTOM MAX R	CLASS 150	CLASS 300 /400 /600	CLASS 900	CLASS 1500	CLASS 2500
1 1/2"	150	R19	65.07	6.35	8.74	0.8	82.5	-	-	-	-
1 1/2"	300	R20	58.27	6.35	8.74	0.8	-	90.5	-	-	-
-	400	-	-	-	-	-	-	-	-	-	-
1 1/2"	600	R20	58.27	6.35	8.74	0.8	-	90.5	-	-	-
-	900	-	-	-	-	-	-	-	-	-	-
1 1/2"	1500	R20	58.27	6.35	8.74	0.8	-	-	-	92	-
1 1/2"	2500	R23	82.55	7.82	11.91	0.8	-	-	-	-	114

USE CLASS 600 SIZES 1/2" TO 3 1/4"

50NB NOMINAL BORE (2") PIPE OD 60.33mm (1)

NOMINAL SIZE	CLASS NPS	GROOVE NO.	GROOVE DIMENSIONS				DIAMETER OF RAISED FACE K				
			PITCH DIA (mm) P	DEPTH (mm) F	WIDTH (mm)	RAD AT BOTTOM MAX R	CLASS 150	CLASS 300 /400 /600	CLASS 900	CLASS 1500	CLASS 2500
2"	150	R22	82.55	6.35	8.74	0.8	102	-	-	-	-
2"	300	R23	82.55	7.82	11.91	0.8	-	108	-	-	-
-	400	-	-	-	-	-	-	-	-	-	-
2"	600	R23	82.55	7.82	11.91	0.8	-	108	-	-	-
-	900	-	-	-	-	-	-	-	-	-	-
2"	1500	R24	95.25	7.92	11.91	0.8	-	-	-	124	-
2"	2500	R26	101.6	7.92	11.91	0.8	-	-	-	-	133

USE CLASS 1500 SIZES 1/2" TO 3 1/4"

FORGED FLANGES: RING JOINT FACINGS



**HARKUS
STEEL**

ASME B16.5

50NB NOMINAL BORE (2") PIPE OD 60.33mm (2)

NOMINAL SIZE	CLASS NPS	GROOVE NO.	GROOVE DIMENSIONS				DIAMETER OF RAISED FACE K				
			PITCH DIA (mm) P	DEPTH (mm) F	WIDTH (mm)	RAD AT BOTTOM MAX R	CLASS 150	CLASS 300 /400 /600	CLASS 900	CLASS 1500	CLASS 2500
-	150	-	-	-	-	-	-	-	-	-	-
2"	300	R30	117.48	7.92	11.91	0.8	-	146	-	-	-
-	400	-	-	-	-	-	-	-	-	-	-
2"	600	R30	123.83	7.92	11.91	0.8	-	146	-	-	-
-	900	-	-	-	-	-	-	-	-	-	-
2"	1500	-	-	-	-	-	-	-	-	-	-
2"	2500	-	-	-	-	-	-	-	-	-	-

65NB NOMINAL BORE (2 1/2") PIPE OD 73.03mm

NOMINAL SIZE	CLASS NPS	GROOVE NO.	GROOVE DIMENSIONS				DIAMETER OF RAISED FACE K				
			PITCH DIA (mm) P	DEPTH (mm) F	WIDTH (mm)	RAD AT BOTTOM MAX R	CLASS 150	CLASS 300 /400 /600	CLASS 900	CLASS 1500	CLASS 2500
2 1/2"	150	R25	101.5	6.36	8.74	0.8	121	-	-	-	-
2 1/2"	300	R26	101.6	7.92	11.91	0.8	-	127	-	-	-
-	400	-	-	-	-	-	-	-	-	-	-
2 1/2"	600	R26	101.6	7.92	11.91	0.8	-	127	-	-	-
-	900	-	-	-	-	-	-	-	-	-	-
2 1/2"	1500	R27	107.95	7.92	11.91	0.8	-	-	-	137	-
2 1/2"	2500	R28	111.13	8.52	13.49	1.5	-	-	-	-	149

80NB NOMINAL BORE (3") PIPE OD 88.9mm

NOMINAL SIZE	CLASS NPS	GROOVE NO.	GROOVE DIMENSIONS				DIAMETER OF RAISED FACE K				
			PITCH DIA (mm) P	DEPTH (mm) F	WIDTH (mm)	RAD AT BOTTOM MAX R	CLASS 150	CLASS 300 /400 /600	CLASS 900	CLASS 1500	CLASS 2500
3"	150	R29	114.3	6.35	8.74	0.8	133	-	-	-	-
3"	300	R31	123.83	7.92	11.91	0.8	-	146	-	-	-
-	400	-	-	-	-	-	-	-	-	-	-
3"	600	R31	123.83	7.92	11.91	0.8	-	146	-	-	-
3"	900	R31	123.83	7.92	11.91	0.8	-	-	156	-	-
3"	1500	R35	136.53	7.92	11.91	0.8	-	-	-	168	-
3"	2500	R32	127	9.53	13.49	1.5	-	-	-	-	168



FOR RING JOINTS WITH LAPPED FLANGES IN CLASS 300 AND 600, RING AND GROOVE NUMBER R30 IS USED INSTEAD OF R31

FORGED FLANGES: RING JOINT FACINGS



**HARKUS
STEEL**

ASME B16.5

100NB NOMINAL BORE (4") PIPE OD 114.3mm

NOMINAL SIZE	CLASS NPS	GROOVE NO.	GROOVE DIMENSIONS				DIAMETER OF RAISED FACE K				
			PITCH DIA (mm) P	DEPTH (mm) E	WIDTH (mm)	RAD AT BOTTOM MAX R	CLASS 150	CLASS 300 /400 /600	CLASS 900	CLASS 1500	CLASS 2500
4"	150	R36	149.23	6.35	8.74	0.8	171	-	-	-	-
4"	300	R37	149.23	7.92	11.91	0.8	-	175	-	-	-
-	400	-	-	-	-	-	-	-	-	-	-
4"	600	R37	149.23	7.92	11.91	0.8	-	175	-	-	-
4"	900	R37	149.23	7.92	11.91	0.8	-	-	181	-	-
4"	1500	R39	161.93	7.92	11.91	0.8	-	-	-	194	-
4"	2500	R38	157.16	11.13	16.66	1.5	-	-	-	-	203

125NB NOMINAL BORE (5") PIPE OD 141.3mm

NOMINAL SIZE	CLASS NPS	GROOVE NO.	GROOVE DIMENSIONS				DIAMETER OF RAISED FACE K				
			PITCH DIA (mm) P	DEPTH (mm) E	WIDTH (mm)	RAD AT BOTTOM MAX R	CLASS 150	CLASS 300 /400 /600	CLASS 900	CLASS 1500	CLASS 2500
5"	150	R40	171.45	6.35	8.74	0.8	194	-	-	-	-
5"	300	R41	181.08	7.92	11.91	0.8	-	210	-	-	-
-	400	-	-	-	-	-	-	-	-	-	-
5"	600	R41	181.08	7.92	11.91	0.8	-	210	-	-	-
5"	900	R41	181.08	7.92	11.91	0.8	-	-	216	-	-
5"	1500	R44	193.68	7.92	11.91	0.8	-	-	-	229	-
5"	2500	R42	190.5	12.7	19.84	1.5	-	-	-	-	241

150NB NOMINAL BORE (6") PIPE OD 168.28mm

NOMINAL SIZE	CLASS NPS	GROOVE NO.	GROOVE DIMENSIONS				DIAMETER OF RAISED FACE K				
			PITCH DIA (mm) P	DEPTH (mm) E	WIDTH (mm)	RAD AT BOTTOM MAX R	CLASS 150	CLASS 300 /400 /600	CLASS 900	CLASS 1500	CLASS 2500
6"	150	R43	193.68	6.35	8.74	0.8	219	-	-	-	-
6"	300	R45	211.12	7.92	11.91	0.8	-	241	-	-	-
-	400	-	-	-	-	-	-	-	-	-	-
6"	600	R45	211.12	7.92	11.91	0.8	-	241	-	-	-
6"	900	R45	211.12	7.92	11.91	0.8	-	-	241	-	-
6"	1500	R46	211.14	9.53	13.49	1.5	-	-	-	248	-
6"	2500	R47	228.6	12.7	19.84	1.5	-	-	-	-	279

200NB NOMINAL BORE (8") PIPE OD 219.08mm

NOMINAL SIZE	CLASS NPS	GROOVE NO.	GROOVE DIMENSIONS				DIAMETER OF RAISED FACE K				
			PITCH DIA (mm) P	DEPTH (mm) E	WIDTH (mm)	RAD AT BOTTOM MAX R	CLASS 150	CLASS 300 /400 /600	CLASS 900	CLASS 1500	CLASS 2500
8"	150	R48	247.65	6.35	8.74	0.8	273	-	-	-	-
8"	300	R49	269.88	7.92	11.91	0.8	-	302	-	-	-
8"	400	R49	269.88	7.92	11.91	0.8	-	302	-	-	-
8"	600	R49	269.88	7.92	11.91	0.8	-	302	-	-	-
8"	900	R49	269.88	7.92	11.91	0.8	-	-	308	-	-
8"	1500	R50	269.4	11.13	16.66	1.5	-	-	-	316	-
8"	2500	R51	279.4	14.27	23.01	1.5	-	-	-	-	340

FOR RING JOINTS WITH LAPPED FLANGES IN CLASS 300 AND 600, RING AND GROOVE NUMBER R30 IS USED INSTEAD OF R31

FORGED FLANGES: RING JOINT FACINGS



**HARKUS
STEEL**
ASME B16.5

250NB NOMINAL BORE (10") PIPE OD 273.05mm

NOMINAL SIZE	CLASS NPS	GROOVE NO.	GROOVE DIMENSIONS					DIAMETER OF RAISED FACE K			
			PITCH DIA (mm) P	DEPTH (mm) F	WIDTH (mm)	RAD AT BOTTOM MAX R	CLASS 150	CLASS 300 /400 /600	CLASS 900	CLASS 1500	CLASS 2500
10"	150	R52	304.8	6.35	8.74	0.8	330	-	-	-	-
10"	300	R53	323.85	7.92	11.91	0.8	-	356	-	-	-
10"	400	R53	323.85	7.92	11.91	0.8	-	356	-	-	-
10"	600	R53	323.85	7.92	11.91	0.8	-	356	-	-	-
10"	900	R53	323.85	7.92	11.91	0.8	-	-	362	-	-
10"	1500	R54	323.9	11.13	16.66	1.5	-	-	-	371	-
10"	2500	R55	342.9	17.48	30.18	2.4	-	-	-	-	425

300NB NOMINAL BORE (12") PIPE OD 323.85mm

NOMINAL SIZE	CLASS NPS	GROOVE NO.	GROOVE DIMENSIONS					DIAMETER OF RAISED FACE K			
			PITCH DIA (mm) P	DEPTH (mm) F	WIDTH (mm)	RAD AT BOTTOM MAX R	CLASS 150	CLASS 300 /400 /600	CLASS 900	CLASS 1500	CLASS 2500
12"	150	R56	381	6.35	8.74	0.8	406	-	-	-	-
12"	300	R57	381	7.92	11.91	0.8	-	413	-	-	-
12"	400	R57	381	7.92	11.91	0.8	-	413	-	-	-
12"	600	R57	381	7.92	11.91	0.8	-	413	-	-	-
12"	900	R57	381	7.92	11.91	0.8	-	-	419	-	-
12"	1500	R58	381	14.27	23.01	1.5	-	-	-	438	-
12"	2500	R60	406.4	17.35	33.32	2.4	-	-	-	-	495

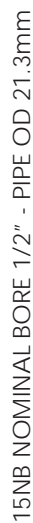
350NB NOMINAL BORE (14") PIPE OD 355.6mm

NOMINAL SIZE	CLASS NPS	GROOVE NO.	GROOVE DIMENSIONS					DIAMETER OF RAISED FACE K			
			PITCH DIA (mm) P	DEPTH (mm) F	WIDTH (mm)	RAD AT BOTTOM MAX R	CLASS 150	CLASS 300 /400 /600	CLASS 900	CLASS 1500	CLASS 2500
14"	150	R59	396.68	6.35	8.74	0.8	425	-	-	-	-
14"	300	R61	419.1	7.92	11.91	0.8	-	457	-	-	-
14"	400	R61	419.1	7.92	11.91	0.8	-	457	-	-	-
14"	600	R61	419.1	7.92	11.91	0.8	-	457	-	-	-
14"	900	R62	419.1	11.13	16.668	1.5	-	-	467	-	-
14"	1500	R63	419.1	15.58	26.97	2.4	-	-	-	489	-
-	2500	-	-	-	-	-	-	-	-	-	-



FOR RING JOINTS WITH LAPPED FLANGES IN CLASS 300 AND 600, RING AND GROOVE NUMBER R30 IS USED INSTEAD OF R31

LARGE & SMALL TONGUE / GROOVE FACINGS



NOMINAL PIPE SIZE		OD			ID/L/S TONGUE	OD			ID L/S TONGUE	DIAMETER OF RAISED FACE MIN.	
1/2"	LARGE MALE & LARGE TONGUE	(mm) R	34.9	mm U	LARGE FEMALE & LARGE TONGUE	(mm) W	36.6	LARGE FEMALE & GROOVE	44	46	
	SMALL MALE	(mm) R	18.3		35.1	SMALL FEMALE	(mm) R	19.9	SMALL FEMALE & GROOVE	44	
	SMALL TONGUE	(mm) T	35.1		SMALL TONGUE	(mm) Y	36.5	23.8	mm Z		

20NB NOMINAL BORE 3/4" - PIPE OD 26.67mm

NOMINAL PIPE SIZE				OD		ID L/S TONGUE	OD		ID L/S TONGUE	DIAMETER OF RASED FACE MIN.	
3/4"	LARGE MALE & TONGUE (mm) R	238	42.9	mm U	LARGE FEMALE & TONGUE (mm) W	25.4	44.4	mm Z	SMALL FEMALE & GROOVE	52	
	SMALL MALE (mm) R				SMALL FEMALE (mm) R						
	SMALL TONGUE (mm) T				SMALL GROOVE (mm) Y						
3/4"	LARGE MALE & TONGUE (mm) R	238	42.9	mm U	LARGE FEMALE & TONGUE (mm) W	25.4	44.4	mm Z	SMALL FEMALE & GROOVE	54	
	SMALL MALE (mm) R				SMALL FEMALE (mm) R						
	SMALL TONGUE (mm) T				SMALL GROOVE (mm) Y						

25NB NOMINAL BORE 1" - PIPE OD 33.4mm

NOMINAL PIPE SIZE		OD		ID L/S TONGUE	OD		ID LS TONGUE	DIAMETER OF RAISED FACE MIN.					
1"	LARGE MALE & LARGE TONGUE (mm) R	50.8	30.2	47.8	mm U	LARGE FEMALE & LARGE TONGUE (mm) W	52.4	31.8	49.2	mm Z	SMALL FEMALE & GROOVE	57	
	SMALL MALE (mm) R					SMALL FEMALE (mm) R						SMALL FEMALE & GROOVE	62
	SMALL TONGUE (mm) T					SMALL GROOVE (mm) Y							

32NB NOMINAL BORE 1 1/4" - PIPE OD 42.16mm

NOMINAL PIPE SIZE	OD			ID L/S TONGUE	OD			ID L/S TONGUE	DIAMETER OF RAISED FACE MIN
	LARGE MALE & TONGUE (mm) R	SMALL MALE (mm) R	SMALL TONGUE (mm) T		LARGE FEMALE & TONGUE (mm) R	SMALL FEMALE (mm) W	SMALL GROOVE (mm) Y		
1 1/4"	63.5	38.1	57.2	47.6	65.1	39.7	58.7	46	SMALL FEMALE & GROOVE
									LARGE FEMALE & GROOVE



ASME B16.5



40NB NOMINAL BORE 1 1/2" - PIPE OD 48.26mm

NOMINAL PIPE SIZE	OD			ID L/S TONGUE	OD		ID L/S TONGUE	ID L/S TONGUE	DIAMETER OF RAISED FACE MIN.	
	LARGE MALE & LARGE TONGUE (mm) R	SMALL MALE (mm) R	SMALL TONGUE (mm) T	mm U	LARGE FEMALE & LARGE TONGUE (mm) W	SMALL FEMALE (mm) R	SMALL GROOVE (mm) Y	mm Z	SMALL FEMALE & GROOVE	LARGE FEMALE & GROOVE
1 1/2"	73	44.4	63.5	54	74.6	46	65.1	52.4	73	84

50NB NOMINAL BORE 2" - PIPE OD 60.33mm

NOMINAL PIPE SIZE	OD			ID L/S TONGUE	OD		ID L/S TONGUE	ID L/S TONGUE	DIAMETER OF RAISED FACE MIN.	
	LARGE MALE & LARGE TONGUE (mm) R	SMALL MALE (mm) R	SMALL TONGUE (mm) T	mm U	LARGE FEMALE & LARGE TONGUE (mm) W	SMALL FEMALE (mm) R	SMALL GROOVE (mm) Y	mm Z	SMALL FEMALE & GROOVE	LARGE FEMALE & GROOVE
2"	92.1	57.2	82.6	73	93.7	58.8	84.1	71.4	92	103

65NB NOMINAL BORE 2 1/2" - PIPE OD 73.03mm

NOMINAL PIPE SIZE	OD			ID L/S TONGUE	OD		ID L/S TONGUE	ID L/S TONGUE	DIAMETER OF RAISED FACE MIN.	
	LARGE MALE & LARGE TONGUE (mm) R	SMALL MALE (mm) R	SMALL TONGUE (mm) T	mm U	LARGE FEMALE & LARGE TONGUE (mm) W	SMALL FEMALE (mm) R	SMALL GROOVE (mm) Y	mm Z	SMALL FEMALE & GROOVE	LARGE FEMALE & GROOVE
2 1/2"	104.8	68.3	95.2	85.7	106.4	69.8	96.8	84.1	105	116

80NB NOMINAL BORE 3" - PIPE OD 88.9mm

NOMINAL PIPE SIZE	OD			ID L/S TONGUE	OD		ID L/S TONGUE	ID L/S TONGUE	DIAMETER OF RAISED FACE MIN.	
	LARGE MALE & LARGE TONGUE (mm) R	SMALL MALE (mm) R	SMALL TONGUE (mm) T	mm U	LARGE FEMALE & LARGE TONGUE (mm) W	SMALL FEMALE (mm) R	SMALL GROOVE (mm) Y	mm Z	SMALL FEMALE & GROOVE	LARGE FEMALE & GROOVE
3"	127	84.1	117.5	108	128.6	85.7	119.1	106.4	127	138

100NB NOMINAL BORE 4" - PIPE OD 114.3mm

NOMINAL PIPE SIZE	OD			ID L/S TONGUE	OD		ID L/S TONGUE	ID L/S TONGUE	DIAMETER OF RAISED FACE MIN.	
	LARGE MALE & LARGE TONGUE (mm) R	SMALL MALE (mm) R	SMALL TONGUE (mm) T	mm U	LARGE FEMALE & LARGE TONGUE (mm) W	SMALL FEMALE (mm) R	SMALL GROOVE (mm) Y	mm Z	SMALL FEMALE & GROOVE	LARGE FEMALE & GROOVE
4"	157.2	109.5	144.5	131.8	158.8	111.1	146	130.2	157	168

125NB NOMINAL BORE 5" - PIPE OD 141.3mm

NOMINAL PIPE SIZE	OD			ID L/S TONGUE	OD		ID L/S TONGUE	ID L/S TONGUE	DIAMETER OF RAISED FACE MIN.	
	LARGE MALE & LARGE TONGUE (mm) R	SMALL MALE (mm) R	SMALL TONGUE (mm) T	mm U	LARGE FEMALE & LARGE TONGUE (mm) W	SMALL FEMALE (mm) R	SMALL GROOVE (mm) Y	mm Z	SMALL FEMALE & GROOVE	LARGE FEMALE & GROOVE
5"	185.7	136.5	173	160.3	187.3	138.1	174.6	158.8	186	197

150NB NOMINAL BORE 6" - PIPE OD 168.28mm

NOMINAL PIPE SIZE	OD			ID L/S TONGUE	OD		ID L/S TONGUE	ID L/S TONGUE	DIAMETER OF RAISED FACE MIN.	
	LARGE MALE & LARGE TONGUE (mm) R	SMALL MALE (mm) R	SMALL TONGUE (mm) T	mm U	LARGE FEMALE & LARGE TONGUE (mm) W	SMALL FEMALE (mm) R	SMALL GROOVE (mm) Y	mm Z	SMALL FEMALE & GROOVE	LARGE FEMALE & GROOVE
6"	215.9	161.9	203.2	190.5	217.5	163.5	204.8	188.9	216	227

LARGE & SMALL MALE / FEMALE FACINGS

LARGE & SMALL TONGUE / GROOVE FACINGS



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STEEL**

ASME B16.5



200NB NOMINAL BORE 8" - PIPE OD 219.08mm

NOMINAL PIPE SIZE	OD			ID L/S TONGUE	OD			ID L/S TONGUE	DIAMETER OF RAISED FACE MIN.
	LARGE MALE & LARGE TONGUE (mm) R	SMALL MALE (mm) R	SMALL TONGUE (mm) T		LARGE FEMALE & LARGE TONGUE (mm) W	SMALL FEMALE (mm) R	SMALL GROOVE (mm) Y		
8"	269.9	212.7	254	238.1	217.5	214.3	255.6	mm Z	270 281
									LARGE FEMALE & GROOVE

250NB NOMINAL BORE 10" - PIPE OD 273.05mm

NOMINAL PIPE SIZE	OD			ID L/S TONGUE	OD			ID L/S TONGUE	DIAMETER OF RAISED FACE MIN.
	LARGE MALE & LARGE TONGUE (mm) R	SMALL MALE (mm) R	SMALL TONGUE (mm) T		LARGE FEMALE & LARGE TONGUE (mm) W	SMALL FEMALE (mm) R	SMALL GROOVE (mm) Y		
10"	323.8	266.7	304.8	285.8	325.4	268.3	306.4	mm Z	324 355
									LARGE FEMALE & GROOVE

300NB NOMINAL BORE 12" - PIPE OD 323.85mm

NOMINAL PIPE SIZE	OD			ID L/S TONGUE	OD			ID L/S TONGUE	DIAMETER OF RAISED FACE MIN.
	LARGE MALE & LARGE TONGUE (mm) R	SMALL MALE (mm) R	SMALL TONGUE (mm) T		LARGE FEMALE & LARGE TONGUE (mm) W	SMALL FEMALE (mm) R	SMALL GROOVE (mm) Y		
12"	381	317.5	362	342.9	382.6	319.1	363.5	mm Z	381 392
									LARGE FEMALE & GROOVE

350NB NOMINAL BORE 14" - PIPE OD 355.6mm

NOMINAL PIPE SIZE	OD			ID L/S TONGUE	OD			ID L/S TONGUE	DIAMETER OF RAISED FACE MIN.
	LARGE MALE & LARGE TONGUE (mm) R	SMALL MALE (mm) R	SMALL TONGUE (mm) T		LARGE FEMALE & LARGE TONGUE (mm) W	SMALL FEMALE (mm) R	SMALL GROOVE (mm) Y		
14"	412.8	349.2	393.7	374.6	414.3	350.8	395.3	mm Z	413 424
									LARGE FEMALE & GROOVE

400NB NOMINAL BORE 16" - PIPE OD 406.4mm

NOMINAL PIPE SIZE	OD			ID L/S TONGUE	OD			ID L/S TONGUE	DIAMETER OF RAISED FACE MIN.
	LARGE MALE & LARGE TONGUE (mm) R	SMALL MALE (mm) R	SMALL TONGUE (mm) T		LARGE FEMALE & LARGE TONGUE (mm) W	SMALL FEMALE (mm) R	SMALL GROOVE (mm) Y		
16"	469.9	400	447.5	425.4	471.5	401.6	449.3	mm Z	470 481
									LARGE FEMALE & GROOVE

450NB NOMINAL BORE 18" - PIPE OD 457.2mm

NOMINAL PIPE SIZE	OD			ID L/S TONGUE	OD			ID L/S TONGUE	DIAMETER OF RAISED FACE MIN.
	LARGE MALE & LARGE TONGUE (mm) R	SMALL MALE (mm) R	SMALL TONGUE (mm) T		LARGE FEMALE & LARGE TONGUE (mm) W	SMALL FEMALE (mm) R	SMALL GROOVE (mm) Y		
18"	533.4	450.8	511.2	489	535	452.4	512.8	mm Z	533 544
									LARGE FEMALE & GROOVE

500NB NOMINAL BORE 20" - PIPE OD 508mm

NOMINAL PIPE SIZE	OD			ID L/S TONGUE	OD			ID L/S TONGUE	DIAMETER OF RAISED FACE MIN.
	LARGE MALE & LARGE TONGUE (mm) R	SMALL MALE (mm) R	SMALL TONGUE (mm) T		LARGE FEMALE & LARGE TONGUE (mm) W	SMALL FEMALE (mm) R	SMALL GROOVE (mm) Y		
20"	584.2	501.6	558.8	533.4	585.8	503.2	560.4	mm Z	584 595
									LARGE FEMALE & GROOVE

600NB NOMINAL BORE 24" - PIPE OD 609.6mm

NOMINAL PIPE SIZE	OD			ID L/S TONGUE	OD			ID L/S TONGUE	DIAMETER OF RAISED FACE MIN.
	LARGE MALE & LARGE TONGUE (mm) R	SMALL MALE (mm) R	SMALL TONGUE (mm) T		LARGE FEMALE & LARGE TONGUE (mm) W	SMALL FEMALE (mm) R	SMALL GROOVE (mm) Y		
24"	692.2	603.2	666.8	641.4	693.7	604.8	668.3	mm Z	692 703
									LARGE FEMALE & GROOVE

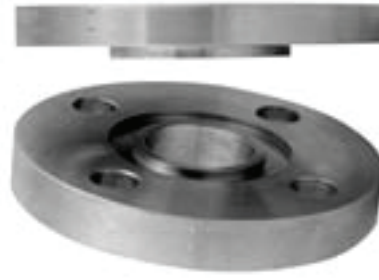
LARGE & SMALL
MALE / FEMALE
FACINGS

LARGE & SMALL
TONGUE /GROOVE
FACINGS



**HARKUS
STEEL**

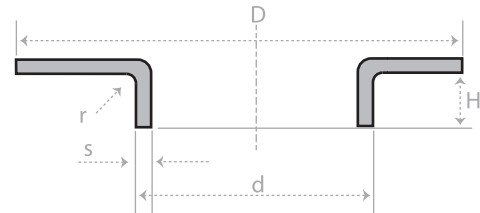
ASME B16.5



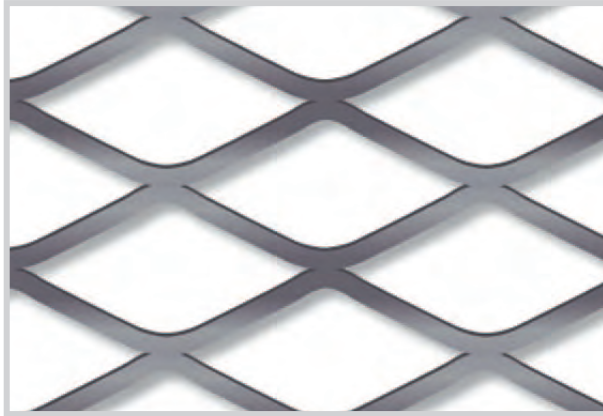
PRESESS AND WELDED COLLARS

NOMINAL DIAMETER	DIAMETER IN INCHES	d	D	r	H	s
10	3/8"	17,2	40	3	9	
15	1/2"	21,3	45	3	9	
20	3/4"	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	-	

AS PER ANSI B36-1 - 10 // B36-19 OR CUSTOMER SPECIFICATION

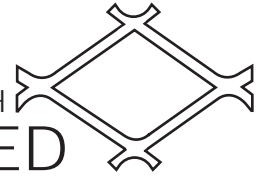


EXPANDED METAL



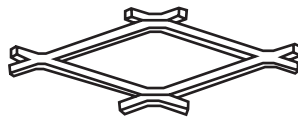
*STANDARD SHEET SIZE 1200 x 2400

EXPANDED MESH
FLATTENED

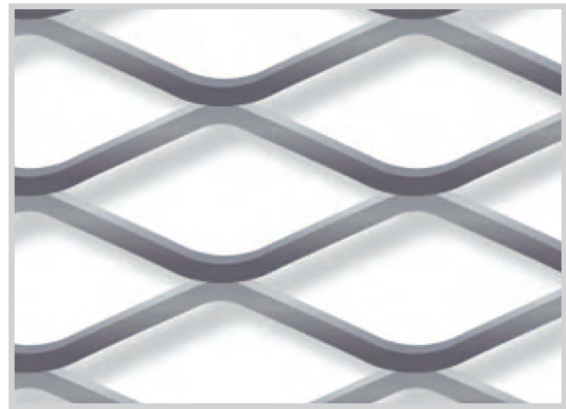


REFERENCE	SIZE	MASS KG
EXP6250D	5/10/1.2/1.0	11
EXP6311F	50/80/4.5/2.5	9
EXP6315F	10/30/3.0/1.6	13
EXP6317F	15/40/3.0/1.6	15
EXP6320C	25/50/3.0/1.6	6
EXP6320D	25/50/3.0/2.0	9
EXP6632E	25/50/4.5/2.5	17
EXP6320G	25/50/3.0/3.0	13
EXP6320H	25/50/4.5/3.0	19

EXPANDED
MESH
RAISED



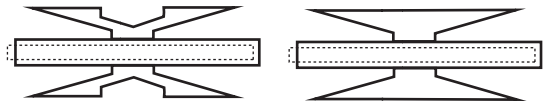
REFERENCE	SIZE	MASS KG
EXP250D	5/10/1.0/1.0	9
EXP305B	40/115/6.0/4.5	26
EXP311E	45/80/3.0/3.0	7
EXP315F	10/30/2.5/1.6	12
EXP318F	15/40/3.0/1.6	10
EXP318H	15/40/3.0/2.5	17
EXP320C	25/50/3.0/1.6	9
EXP320G	25/50/3.0/1.6	12
EXP320J	25/50/6.0/4.5	44
EXP325A	20/60/6.0/4.5	44



*STANDARD SHEET SIZE 1200 x 2400



RAZOR WIRE
STAINLESS STEEL



RAZOR TAPE CONCERTINA

SIZE DIA	STRETCH	WEIGHT
450mm	11mm	6.60
730mm	12mm	9.20
980mm	14mm	14.00

FLATWRAP
(SOLD IN UNITS OF 5 ONLY)

SIZE DIA	STRETCH	WEIGHT
500mm	15mm	7.50
700mm	15mm	11.50
900mm	15mm	14.30





FEATURES

- Modern clean lines
- Available in Stainless Steel
- Available ex stock nationwide
- Easy to erect
- No special tools required for fixing
- Bends have swaged ends (tubular)
- Solid bends have butt ends

STANCHIONS SAFETY ASPECTS AND STRENGTHS

- Harkus tubular stanchions will exceed the minimum strength requirements set out in SANS 10160 based on the Limited State design of SANS 10162 for a concentrated load.
- The resistance to a distributed load is dependent on the stanchion spacing. If our minimum recommended spacing is adhered to, then the minimum strength required for distributed load also exceeds the minimum requirements.

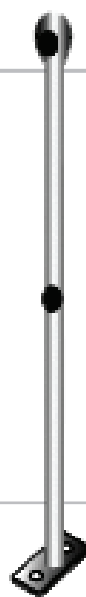


**HARKUS
STEEL**

STAINLESS STEEL STANCHIONS

- Ball type tubular welded construction
- Forged (solid)

SPECIFICATIONS



STANCHION TUBE
BENDS
HANDRAIL TUBING

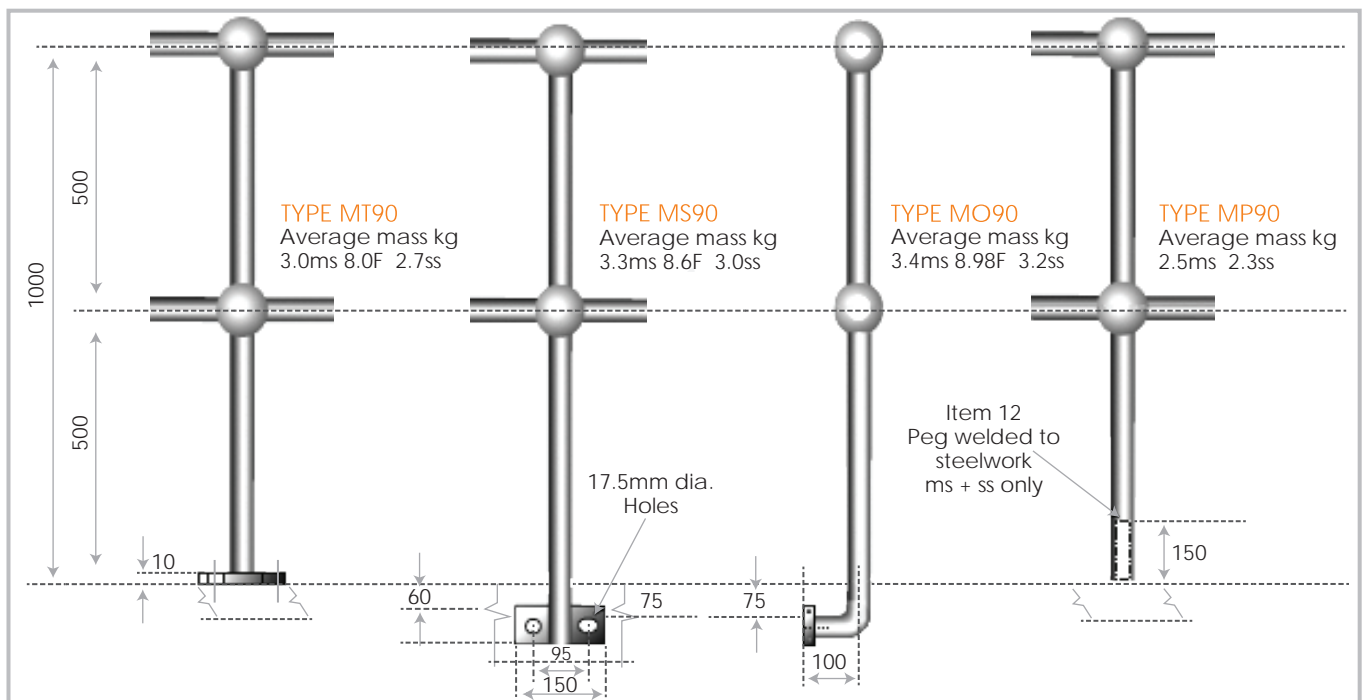
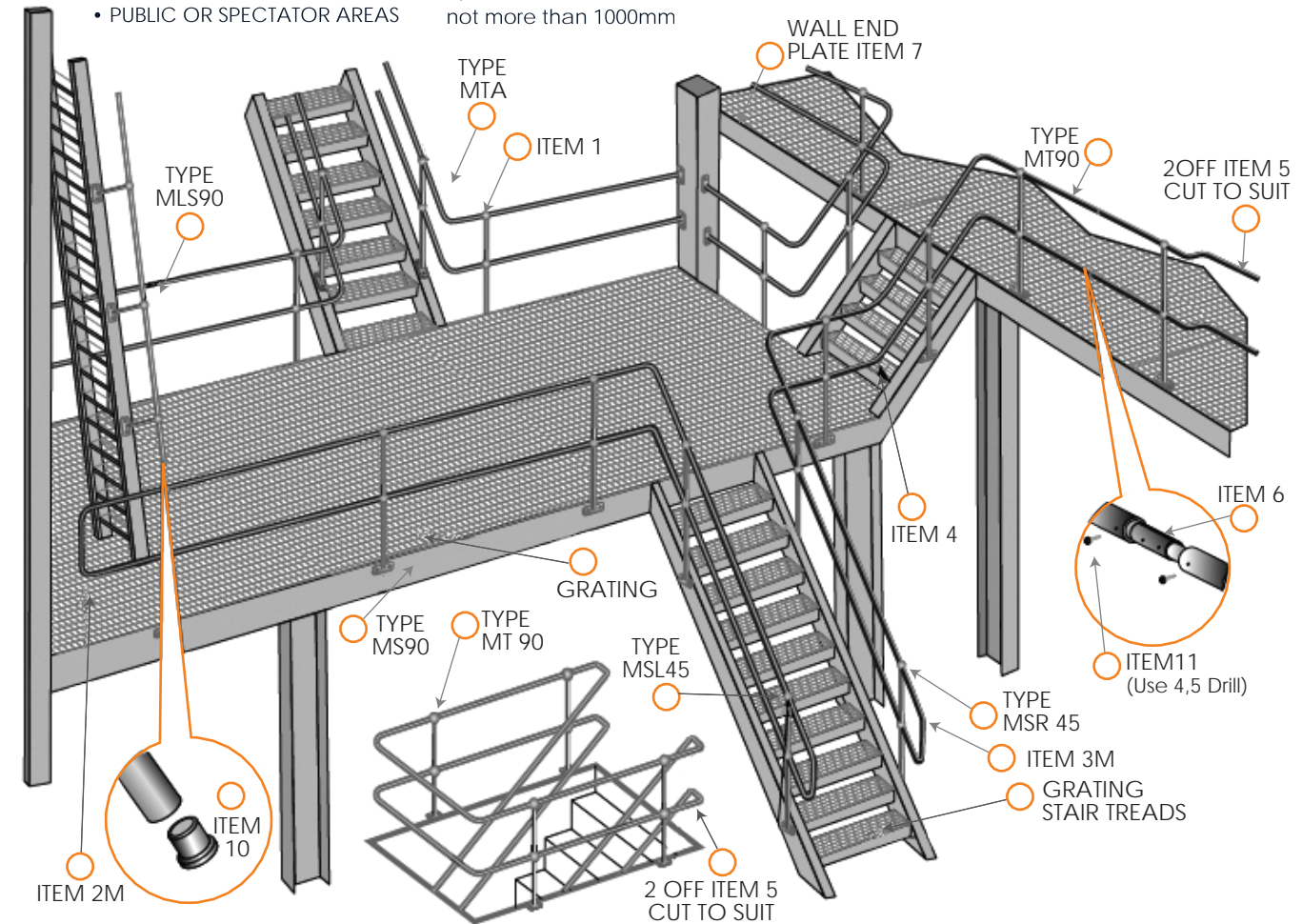
45.0mm O.D
31.8mm O.D
31.8mm O.D
1.5mm thick
6000mm long

SELECTION GUIDE

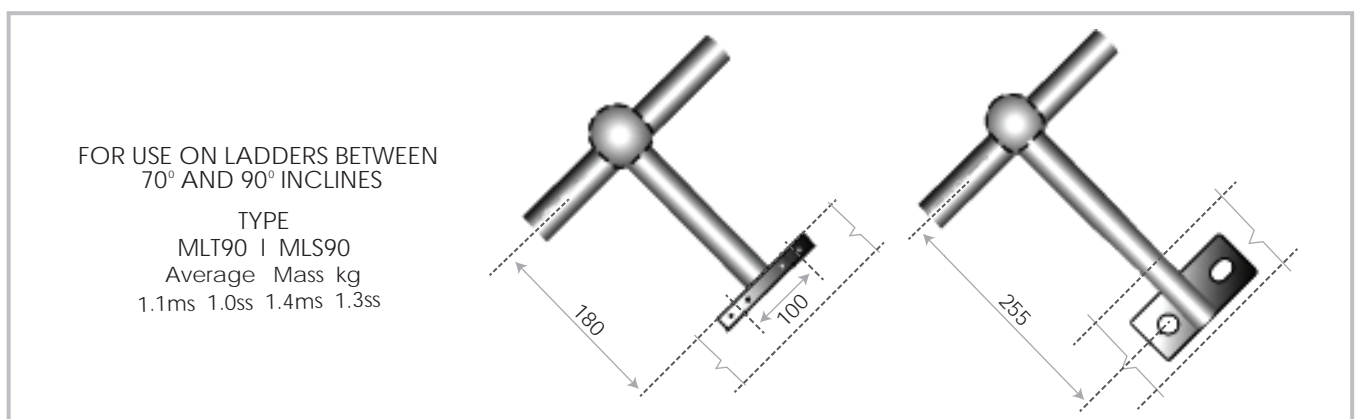
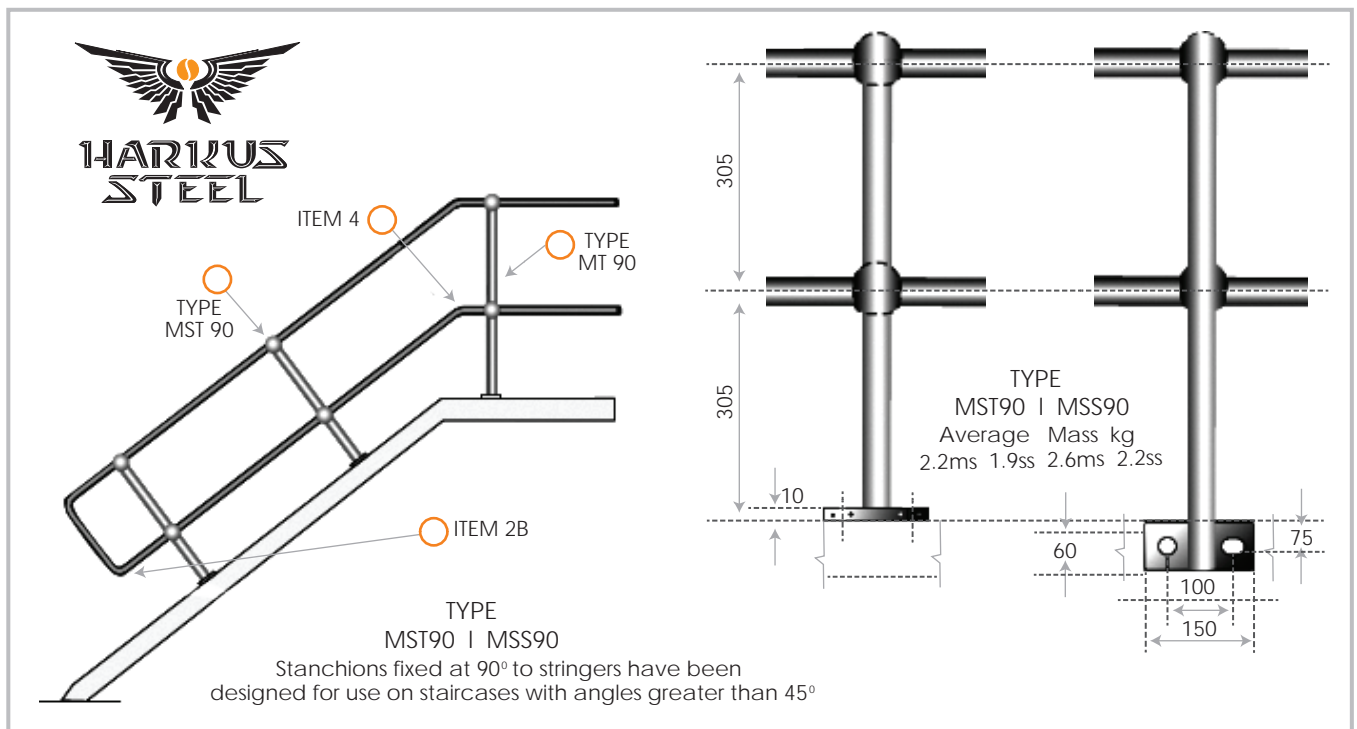
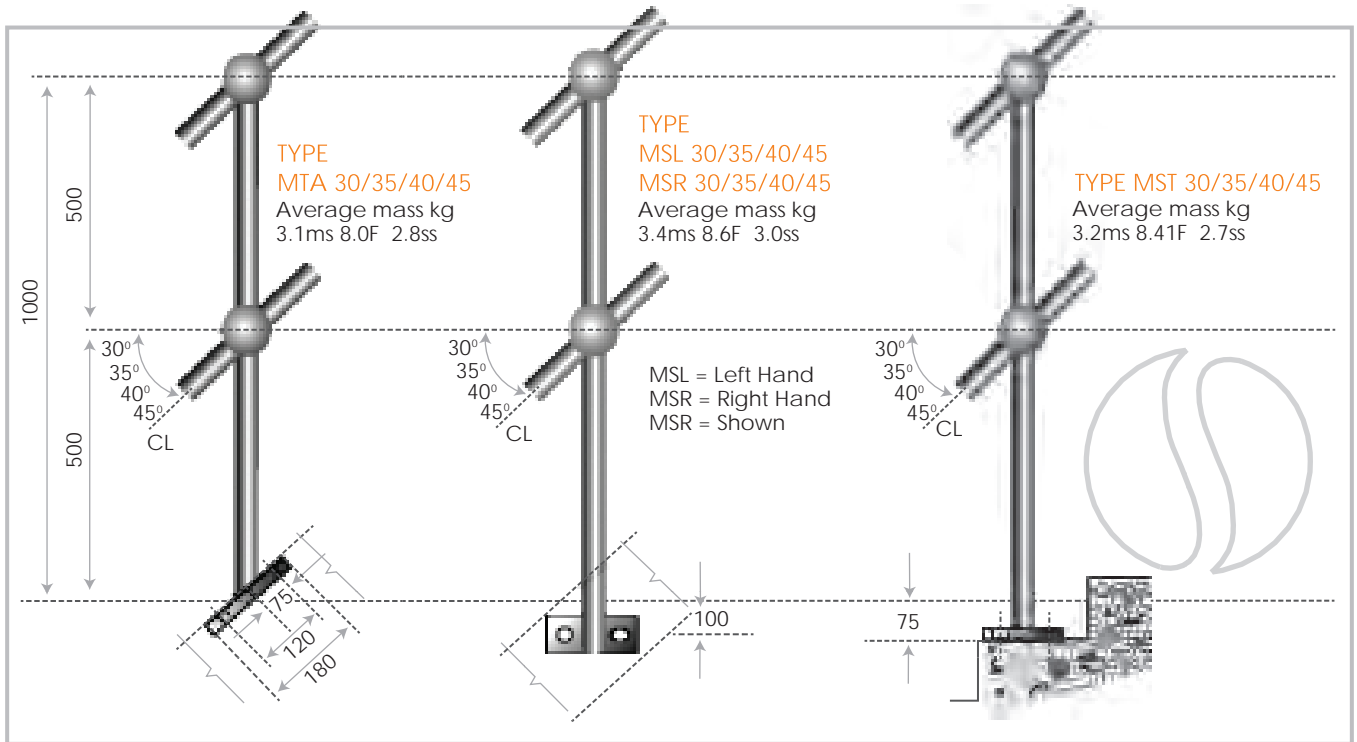


RECOMMENDED STANCHION CENTRES ARE:

- ON STAIRS 1000mm
- PLATFORM AREAS 1500mm
- MAINTENANCE WALKWAYS up to 1800mm
- PUBLIC OR SPECTATOR AREAS not more than 1000mm



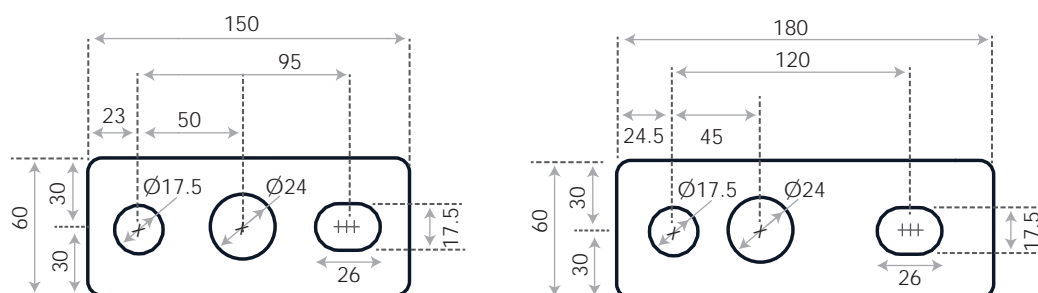
NOTES: FORGED SOLID AND STAINLESS STEEL ANGLE STANCHIONS AVAILABLE EX STOCK IN 40 AND 50 ONLY



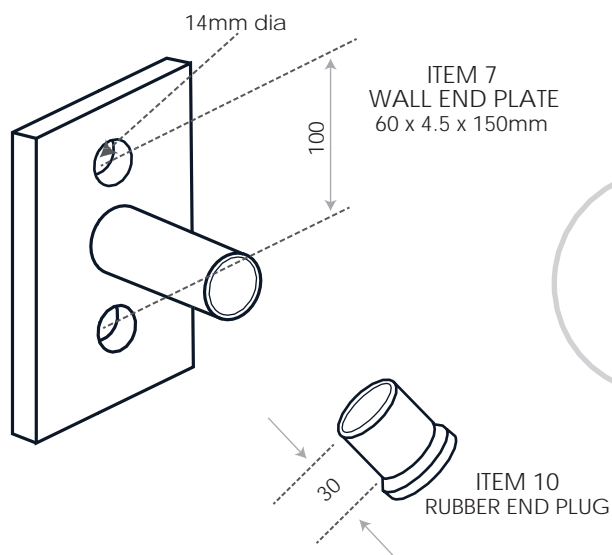
BASE PLATE



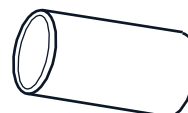
BASE PLATE HOLE CONFIGURATION



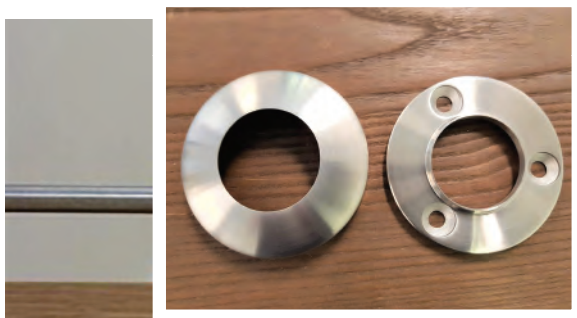
ACCESSORIES



ITEM 11
HAMMER DRIVE SCREW
No 12 electro brssed
(for ms only)



ITEM 12
MILD STEEL - 35mm - solid peg
STAINLESS STEEL - 40mm O.D. Tube

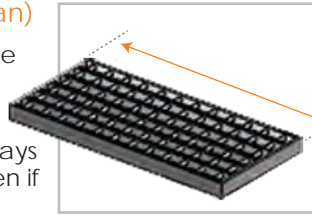


GLOSSARY OF TERMS

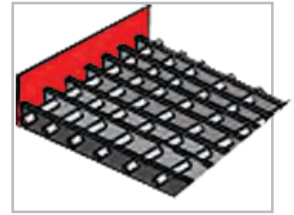
**LENGTH** (direction of span)

The overall dimension of the flooring panel measured parallel to the bearer bars.

NOTE: This dimension is always referred to as the span even if it is shorter than the width.

**KICKPLATE**

A flat bar of greater depth than the bearer bar, welded or bolted to the end, sides or around cut-outs of a floor panel. The kickplate projects above the top of the bearer bar.

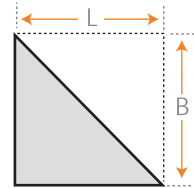
**SPAN** (See length)**WIDTH**

The overall dimension of the flooring panel measured at right angles to the bearer bars.

NOTE: This dimension is always referred to as the width even if it exceeds the length.

**GROSS AREA**

The total area of flooring in rectangular panels from which the completed floor will be fabricated. This is the area that will be invoiced.

**BEARER BAR**

The load-carrying member of uniform section running between supports.

**CUT-OUT**

A area of flooring removed to permit pipes, plant and structural columns etc. to pass through or to clear obstructions.

**TRANSVERSE BAR**

A member fixed at right angles to the bearer bar to provide lateral restraint.

**FIXING CLIPS, SADDLE CLAMPS, LOCKING PLATES**

Devices by which flooring is attached to the supporting structure, or to another panel.

PITCH

The distance centre-to-centre to the bearer bars, or centre-to-centre of transverse bars.

NOTE: Pitch is not the right size of the opening.

**SIDE PLATE**

A plate welded to a straitread for fixing to a stringer.

**O.E.S (Open Ended System)**

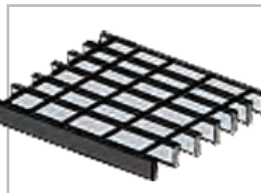
This applies to RECTAGRID grating only where panels are not banded in their length or width.

**NOSING**

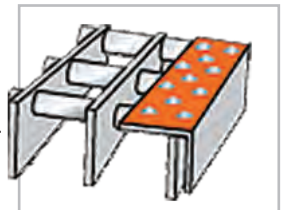
A non-slip sighting edge welded to the front of a straitread.

**UNBANDED**

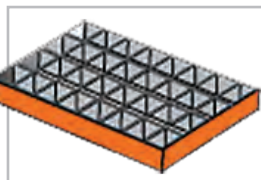
This only applies to GRIPWELD where the panel is open at both ends of the bearer bars, and the transverse bars are trimmed flush on both sides.

**LIPPED TREAT PLATE**

A narrower sighting edge welded onto the edge of grating on stairway landings.

**BANDED**

Bars of similar depth and thickness to the bearer bars are welded to the perimeter of the grating.

**BITUMEN DIPPED**

Only suitable for indoor and non-corrosive a very mildly corrosive outdoor conditions with no exposure to direct sunlight.

RECTAGRIP

PRESSURE LOCKED GRATING

CONSTRUCTION

RECTAGRIP is formed by the unique process of compressive locking of bearer bars and transversals. This process ensures permanent locking and accurate bearer bar pitching and results in the industry's finest grating.

Manufactured under the International ISO 9001 QUALITY MANAGEMENT SYSTEM.

FEATURES

The RECTAGRIP OPEN ENDED SYSTEM or O.E.S eliminates banding of panels, improves appearance, simplifies design and erection and reduces costs.

Due to the absence of welding, less corrosion occurs. Accurate pitching gives an aesthetically pleasing pattern matching and unjoined appearance when joining open ended panels.

All transverse bars are 7.5mm diameter.

RECTAGRIP O.E.S STANDARD PANELS

All RS40 RECTAGRIP panels finish on half pitches in both directions with allowance for 4mm clearance between panels. Saddle clamps will automatically hold panels at full-pitch spacing. Calculation can therefore be based on full-pitches in both directions without making any allowances for clearance between panels.

Standard O.E.S panels are available at prices considerably lower than those for banded panels. Customers using standard panels to cut and fit at site, save in drawing office time and labour.

NOTE: Rectagrid grating has a maximum width of 1440mm and maximum length of 4760mm.

TYPES

RS40 (40 x 40)

25 Bearer Bars per meter width at 40mm pitch

RS40 (45 x 40)

22 Bearer Bars per meter width at 45mm pitch

RS40 (40 x 50)

22 Bearer Bars per meter width at 45mm pitch

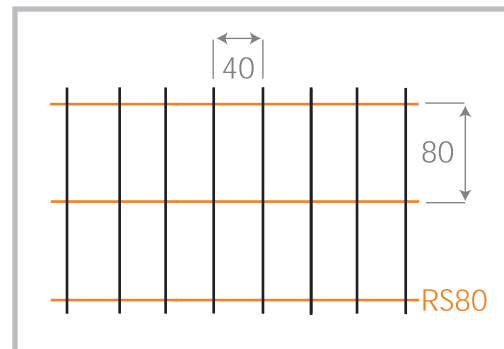
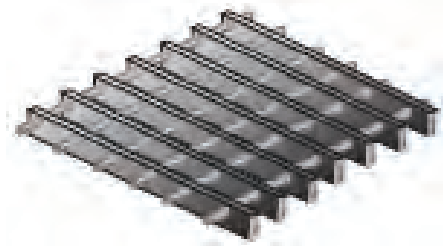
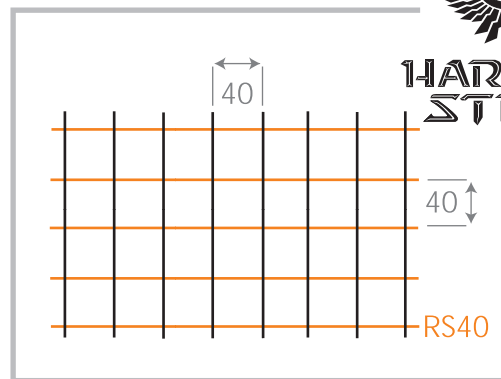
RS80 (80 x 40)

13 Bearer Bars per meter width at 80mm pitch

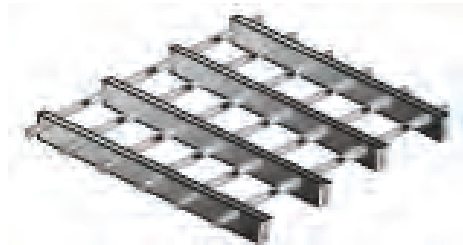
BOTH RS40 AND RS80 ARE AVAILABLE WITH NON-SLIP DIMPLES



**HARKUS
STEEL**



Bearer Bars



BEARER BAR SIZES & MASS OF TYPES AVAILABLE

BEARER BAR SIZE mm	O.E.S MASS kg / sq m STAINLESS STEEL			
	RS40 (40 x 40)	RS40 (45 x 40)	RS40 (45 x 50)	RS80 (80 x 40)
25 x 4.5	29.63	28.77	26.99	18.15
30 x 3.0	25.23	-	-	14.62
30 x 4.5	34.05	32.75	30.97	20.27
40 x 3.0	31.10	-	-	18.85
40 x 4.5	42.88	40.69	38.91	24.51
50 x 4.5	51.70	-	-	28.74
60 x 3.0	42.88	-	-	-
60 x 4.5	60.55	-	-	32.99

ALUMINIUM I BAR

BEARER BAR SIZE mm	PANEL SIZE Length mm Width mm	UNCOATED MASS kg
40	2 400 1 200	32

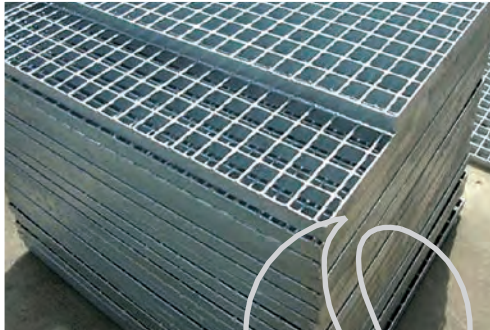


Table of Standard Widths in mm
RECTAGRIP RS40 Positive Non-Slip

TABLE OF STANDARD WIDTHS IN mm

RECTAGRID OPEN ENDED SYSTEM

NO OF BEARER BARS	RS40	RS80
8	-	600
9	-	680
10	-	760
11	-	840
12	-	920
13	-	1000
14	-	1080
15	600	1160
16	640	1240
17	680	1320
18	720	1400
19	760	-
20	800	-
21	840	-
22	880	-
23	920	-
24	960	-
25	1000	-
26	1040	-
27	1080	-
28	1120	-
29	1160	-
30	1200	-
31	1240	-
32	1280	-
33	1320	-
34	1360	-
35	1400	-
36	1440	-

RECTAGRID

NO OF BEARER BARS	RS40	RS80
9	-	645
10	-	725
11	-	805
12	-	885
13	-	965
14	-	1045
15	-	1125
16	605	1205
17	645	1285
18	685	1365
19	725	-
20	765	-
21	805	-
22	845	-
23	885	-
24	925	-
25	965	-
26	1005	-
27	1045	-
28	1085	-
29	1125	-
30	1165	-
31	1205	-
32	1245	-
33	1285	-
34	1325	-
35	1365	-
36	1405	-

TOLERANCE

On widths +/- 5mm On lengths + 0 - 3 mm

MATERIALS AND FINISHES AVAILABLE

MATERIAL	FINISH
STAINLESS STEEL TYPES 304 & 316	Uncoated, pickled and passivated
3CR12	Uncoated, pickled and passivated

TABLE OF STANDARD LENGTH IN mm (SPAN)

RECTAGRID

OPEN ENDED SYSTEM

NO OF BEARER BARS		1	2	3	4	5	6	7	8	9
10	-	-	-	-	-	600	640	680	720	760
20	800	840	880	920	960	1000	1040	1080	1120	1160
30	1200	1240	1280	1320	1360	1400	1440	1480	1520	1560
40	1600	1640	1680	1720	1760	1800	1840	1880	1920	1960
50	2000	2040	2080	2120	2160	2200	2240	2280	2320	2360
60	2400	2440	2480	2520	2560	2600	2640	2680	2720	2760
70	2800	2840	2880	2920	2960	3000	3040	3080	3120	3160
80	3200	3240	3280	3320	3360	3400	3440	3480	3520	3560
90	3600	3640	3680	3720	3760	3800	3840	3880	3920	3960
100	4000	4040	4080	4120	4160	4200	4240	4280	4320	4360
110	4400	4440	4480	4520	4560	4600	4640	4680	4720	4760

The positive non-slip design retains the loading as per Rectagrid RS40 loading table whereas with serated grating the loadings must be reduced.

Non-Slip is at it's maximum because of the positive raised sections on top of each bearer box. It works well in all directions and with all footwear and is self cleaning. Available in mild steel and 3CR12.

NOTE: If ordering grating for screening or decorative purposes - Please advise our sales personnel.

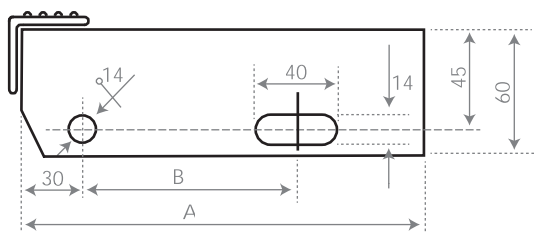
STOCK PANELS AVAILABLE IN RECTAGRID RS40

BEARER BAR SIZE mm	PANEL SIZE Length mm Width mm	UNCOATED MASS kg 40 x 40 45 x 40 45 x 50
25 x 4.5	2 400 1 200	86 82.85 77.72
30 x 4.5	2 400 1 200	100 94.32 89.19
40 x 4.5	2 400 1 200	125 117.19 112.07

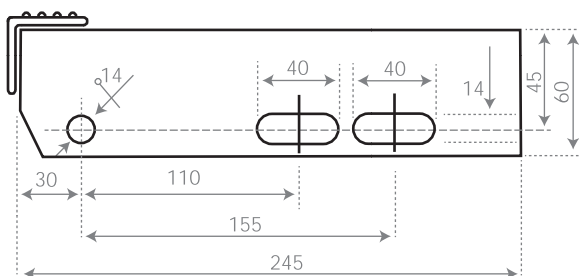
* The above sizes are available in mild steel - uncoated, bitumen dipped or galvanised.

STAIR TREADS

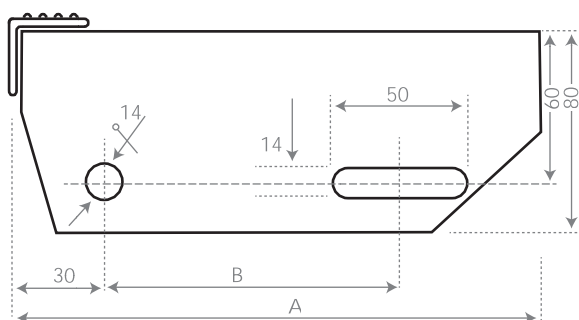
6 x 3 STAIRTREAD SIDE PLATE



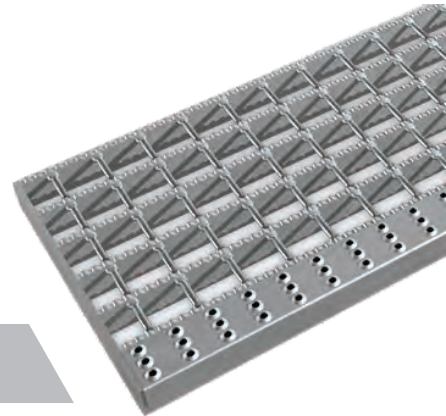
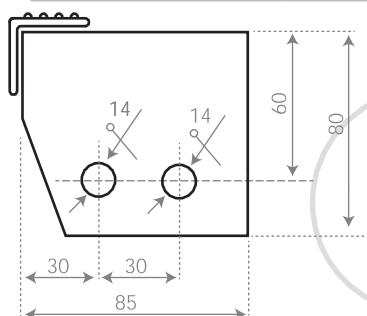
DIMENSION A mm	DIMENSION B
mm 165	110
205	110
245	110 / 155
285	180



80 x 4.5 STAIRTREAD SIDE PLATE



DIMENSION A mm	DIMENSION B
mm 125	65
165	105
205	110
245	110
285	167



FEATURES

Non-slip perforated nosing is supplied as standard on all stairtreads.

This nosing provides: • A non-slip footing • A sighting edge

A side plate is welded to each side of the stairtread for bolting to supports. These side plates are punched to accommodate 12mm diameter bolts at centres shown for the various tread widths.

Special designs of side plates, non-standard punching or non standard sizes can be supplied to customer's specification. Treads can also be manufactured without side plates for welding direct to stringers, tank sides. etc.

Prices are subject to quotation.

TOLERANCE

On widths +/- 5mm On lengths + 0 - 3 mm

MATERIALS AND FINISHES AVAILABLE

MATERIAL	FINISH
STAINLESS STEEL TYPES 304 & 316	Uncoated, pickled and passivated
3CR12	Uncoated, pickled and passivated

SPECIFICATIONS

STAIRTREAD LENGTHS mm	STAIRTREAD WIDTHS mm		BEARER BAR SIZE mm
	85 AND 125	165 TO 285	
	SIDE PLATE SIZE		
UP TO AND INCLUDING 750	80 x 4.5	60 x 3	25 x 4.5
751 to 1000	80 x 4.5	60 x 3	30 x 4.5
1001 to 1200	80 x 4.5	80 x 4.5	40 x 4.5

STOCK SIZES IN RECTAGRID

SIZE mm	UNCOATED MASS kg
600 x 205	4.4
600 x 245	5.1
750 x 205	5.4
750 x 245	6.1
900 x 245	8.1
1000 x 285	10.2

CONVERSION FACTORS

TYPE	FACTOR	RESULT TYPE
Inches	x 25.4	Millimetres
Millimetres	x 0.03937	Inches
Feet	x 0.3048	Metres
Yards	x 0.9144	Metres
Metres	x 39.370	Inches
Metres	x 3.2808	Feet
Metres	x 1.0936	Yards
Kilometres	x 0.6214	Miles
Miles	x 1.6093	Kilometres
Square millimetres	x 0.00155	Square Inches
Square centimetres	x 0.1550	Square Inches
Square inches	x 6.4516	Square centimetres
Square metres	x 10.7639	Square Feet
Square metres	x 1.1960	Square Yards
Square yards	x 0.8361	Square Metres
Square feet	x 0.0929	Square 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
Kilograms	x 2.2046	Pounds
Pounds	x 0.45359	Kilograms
Metric tons	x 0.9842	Tons
Tons	x 1.016	Metric Tons
Kilograms per square metre	x 0.2048	Pounds per Square foot
Pounds per square foot	x 4.882	Kilograms per Square metre
Kilograms per square centimetre	x 14.223	Pounds per Square inch
Pounds per square inch	x 0.0703	Kilograms per Square centimetre
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
Kilogram per metre run	x 0.672	Pound per foot
Pounds per yard run	x 0.496	Kilograms per metre
Pounds per foot run	x 1.488	Kilograms per metre

CORROSION RESISTANCE DATA



- R - The material is **RESISTANT** to the named chemical up to the temperature shown, subject to limitations indicated by the footnotes at the bottom of the page.
- NR - The material is **NOT RECOMMENDED**
- ND - **NO DATA** is available

CHEMICAL	TEMP °C											
	STAINLESS STEEL 18/8 (304, 304L & 321)			MOLYBDENUM STEEL (316 & 316L)			DUPLEX FERRITIC- AUSTENITIC STAINLESS STEEL)			3CR12		
	20	60	100	20	60	100	20	60	100	20	60	100
Aldyhydes	R ¹	R ¹	R ¹	R ¹	R ¹	R ¹	R ¹	R ¹	R ¹	R ¹	R ¹	R ¹
Acetic Acid (10%)	R	R	R	R	R	R	R	R	R	R	R	ND
Acetic Acid (glac & anh)	R	R	NR	R	R	R	R	R	NR	ND	ND	ND
Acetic Anhydride	R ²	NR	NR	R	R	NR	R	R	R	R ²	NR	ND
Acetylene	R	R	R	R	R	R	R	R	R	R	ND	ND
Acid Fumes	R ³	R ³	R ³	R ³	R ³	R ³	R ⁴	NR	NR	NR	NR	NR
Alcohols	R	R	R	R	R	R	R	R	R	R	R	R
Alphatic Esters	R	R	R	R	R	R	R	R	R	R	ND	ND
Alkyl Chlorides	R ⁵	R ⁵	R ⁵	R ⁵ R	R ⁵	R ⁵	R	R	R	R ⁵	ND	ND
Alum	R	R ⁶	NR	R	R ¹	NR	R	R	NR	ND	ND	ND
Ammonia	R	R	R	R	R	R	R	R	R	R	R	R
Amyl Acetate	R	R	R	R	R	R	R	R	R	R	R	R
Aniline	R	R	R	R	R	R	R	R	R	R	R	R
Antimony Trichloride	R ⁵	NR	NR	R ⁵	R ⁵	NR	R	R	NR	NR	NR	NR
Aromatic Solvents	R	R	R	R	R	R	R	R	R	R	R	R
Atmospheric: Industrial	R ⁷	ND	ND	R	ND	ND	R	ND	ND	R ⁷	ND	ND
Atmospheric: Marine	R ⁷	ND	ND	R	ND	ND	R	ND	ND	R ⁷	ND	ND
Atmospheric: Rural	R	ND	ND	R	ND	ND	R	ND	ND	R ⁷	ND	ND
Ascorbic Acid	R ¹	R ¹	R ¹	R	R	R	R	R	R	R ¹	ND	ND
Benzoic Acid	R	R	R	R	R	R	R	R	R	R	R	R
Boric Acid	R	R	R	R	R	R	R	R	R	R	R	R
Brines, Saturated	R ⁸	NR	NR	R ⁸	NR	NR	R	R	R	NR	NR	NR
Bromide (k) soln	R ⁹	NR	NR	R ⁹	R ⁹	R ⁹	R	ND	ND	NR	NR	NR
Bromide (+ aqu)	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Butyl Acetate	R	R	R	R	R	R	R	R	R	R	R	R
Calcium Chloride	NR	NR	NR	R ⁸	NR	NR	R ¹⁰	R ¹⁰	R ¹⁰	NR	NR	NR
Carbon Disulphide	R	R	ND	R	R	ND	R	R	R	R	R	R
Carbonic Acid	R	R	R	R	R	R	R	R	R	R	R ⁹	NR
Carbon Tetrachloride	R	R	R	R	R	R	R	R	R	R	R	R
Caustic Soda & Potash	R	R	R ⁶	R	R	R ⁶	R ⁶	R ⁶	ND	ND	R ⁶	R ⁶
Cellulose Paint	R	R	R	R	R	R	R	R	R	R	R	R
Chlorates of Na, K, Ba	R ¹	R ¹	R ¹	R ¹	R ¹	R ¹	R	R	R	ND	ND	ND
Chlorine, Dry	R	R	R	R	R	R	R	R	ND	ND	ND	ND
Chlorine, Wet	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Chlorides of Na, K, Mg, Ca, Ni, HN4	R ¹⁰	NR	NR	R ⁹	R ¹¹	R ¹¹	R	R	ND	R ⁹	NR	NR
Chlorosulphonic Acid	NR	NR	NR	R ¹⁰	NR	NR	ND	ND	ND	ND	ND	ND

CORROSION RESISTANCE DATA



CHEMICAL	TEMP °C											
	STAINLESS STEEL 18/8 (304, 304L & 321)			MOLYBDENUM STAINLESS STEEL (316 & 316L)			DUPLEX FERRITIC- AUSTENITIC STAINLESS STEEL			3CR12		
	20	60	100	20	60	100	20	60	100	20	60	100
Chromic Acid (80%)	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Citric Acid	R ⁶	R ⁶	R ⁶	R	R	R ⁶	R	R	R	NR	NR	NR
Cresylic Acids (50%)	R	R	R	R	R	R	R	R	R	R	R	R
Detergents, Synthetic	R	R	R	R	R	R	R	R	R	R	R	R
Emulsifiers (all conc)	R	R	R	R	R	R	R	R	R	ND	ND	ND
Esters & Ethers	R	R	R	R	R	R	R	R	R	R	R	R
Fatty Acids (> C6)	R	R	R	R	R	R	R	R	R	R	R	R
Ferritic Chloride	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Fluorinated Refrigerants, Aerosols eg Freon	R ⁵	R	R	R ⁵	R	R	R	R	R	R ⁵	R	NR
Fluorine, Dry	R	ND	ND	R	ND	ND	R	R	ND	ND	ND	ND
Formic Acid	R	NR	NR	R	R	ND	R	R	ND	NR	NR	NR
Fruit Juices	R ¹²	R	R	R	R	R	R	R	R	R ¹³	NR	NR
Gelatine	R ¹	R	R	R ¹	R	R	R	R	R	R ¹	R ¹	ND
Glycols	R	R	R	R	R	R	R	R	R	R	R	R
Hydrobromic Acid (50%)	NR	NR	ND	NR	NR	ND	NR	NR	ND	NR	NR	NR
Hydrochloric Acid (10%)	NR	NR	NR	NR	NR	NR	NR	NR	ND	NR	NR	NR
Hydrochloric Acid (conc)	NR	NR	NR	NR	NR	NR	NR	NR	ND	NR	NR	NR
Hydrocyanic Acid	R	R	ND	R	R	ND	R	R	ND	R	ND	ND
Hydrofluoric Acid	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Hydrogen Peroxide (30%)	R	R	R	R	R	R	R	R	R	R	R	ND
Hydrogen Sulphide	R ⁵	R ⁵	R ⁵	R ⁵	R ⁵	R ⁵	R ⁵	R ⁵	R ⁵	R ⁵	R ⁵	R ⁵
Hypochlorite (Na 12-14%)	R ¹⁴	NR	NR	R ¹⁴	NR	ND	R ¹⁴	ND	ND	R ¹⁴	ND	ND
Ketones	R	R	R	R	R	R	R	R	R	R	ND	ND
Lactic Acid (100%)	R	NR	NR	R	R	NR	R	R	ND	NR	NR	NR
Lead Acetate	R	R	R	R	R	R	R	R	R	R	R	R ⁶
Lead Perchlorate	R ¹	R ¹	R ¹	R	R ¹	ND	ND	ND	ND	NR	NR	NR
Lime (CaO)	R	R	R	R	R	R	R	R	R	R	R	R
Manganate, Potassium (K)	R	R	R	R	R	R	R	ND	ND	R ⁶	ND	ND
Meat Juices	R	R	ND	R	R	ND	R	R	R	R ⁷	NR	NR
Mercuric Chloride	NR	NR	NR	NR	NR	NR	R	R	R	NR	NR	NR
Milk and Milk Products	R	R	R	R	R	R	R	R	R	R	NR	NR
Molasses	R	R	R	R	R	R	R	R	R	R	R	R
Monoethanolamine	R	R	R	R	R	R	R	R	R	R	R	R
Naphthalene	R	R	R	R	R	R	R	R	R	R	R	R
Nitrates of Na, K, NH3	R	R	R	R	R	R	R	R	R	R	R	R
Nitric Acid (<25%)	R	R	R	R	R	R	R	R	R	R	R ¹⁵	NR
Nitric Acid (50%)	R	R	R	R	R	R	R	R	R	R	R ¹⁵	NR
Nitric Acid (90%)	R	NR	NR	R	NR	NR	R	NR	ND	R	NR	NR

CORROSION RESISTANCE DATA



CHEMICAL	TEMP °C											
	STAINLESS STEEL 18/8 (304, 304L & 321)			MOLYBDENUM STAINLESS STEEL (316 & 316L)			DUPLEX FERRITIC- AUSTENITIC STAINLESS STEEL			3CR12		
	20	60	100	20	60	100	20	60	100	20	60	100
Nitric Acid, Fuming	R	R ²	NR	R	R ²	NR	R	NR	NR	ND	ND	ND
Oil, Diesel, Petroleum	R	R	R	R	R	R	R	R	ND	R	R	R
Oils, Essential	R	R	R	R	R	R	R	R	R	R	R	R
Oil, Lube with Aromatic Acids	R	R	R	R	R	R	R	R	R	R	R	R
Oils, Vegetables & Animal	R	R	R	R	R	R	R	R	R	R	R	R
Oxalic Acid	R ⁶	NR	NR	R ⁶	R ¹⁶	NR	R	R	R	NR	NR	NR
Perchloric Acid	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Phenol	R	R	R	R	R	R	R	R	R	R	R	R
Phosphoric Acid (20%)	R	R	R	R	R	R	R	R	R	NR	NR	NR
Phosphoric Acid (50%)	R	R	NR	R	R	R	R	R	R	NR	NR	NR
Phosphoric Acid (95%)	R	R	NR	R	R	NR	R ¹⁷	R ¹⁷	R ¹⁷	NR	NR	NR
Phosphorous Pentoxide	R	R	R ⁵	R	R	R ⁵	R	R	R	ND	ND	ND
Pyridine	R	R	R	R	R	R	R	R	R	R	R	R
Sea Water	R ⁹	NR	NR	R ⁹	NR	NR	R	R	R	NR	NR	NR
Silicic Acid	R	R	R	R	R	R	R	R	R	R	R	R
Sodium Peroxide	R ¹⁶	NR	NR	R ⁶	R ¹⁶	R ¹⁶	R	R	R	NR	NR	NR
Sodium Silicate	R	R	R	R	R	R	R	R	R	R	R	R
Sodium Sulphide	R	R	NR	R	R	NR	R	R	NR	R ⁶	R ⁶	NR
Starch	R	R	R	R	R	R	R	R	R	R	R	R
Sugar, Syrup, Jam	R ¹²	R	R	R	R	R	R	R	R	R ¹²	R ¹²	R ¹²
Sulphamic Acid	R ¹⁸	NR	NR	R	R ¹⁹	NR	R	R	NR	NR	NR	NR
Sulphates (Na, K, Mg, Ca,	R	R	R	R	R	R	R	R	R	R	R	R
Sulphates	R	R	R	R	R	R	R	R	R	NR	NR	NR
Sulphur Dioxide, Dry	R	R	R	R	R	R	R	R	R	R	R	R
Sulphur Dioxide, Wet	R	NR	NR	R	R	NR	R	R	NR	NR	NR	NR
Sulphur Dioxide, ag soln (96%)	R	NR	NR	R	R	R	R	R	R	NR	NR	NR
Sulphur Trioxide	NR	NR	NR	R ⁵	R ⁵	R ⁵	R ⁵	R ⁵	R ⁵	NR	NR	NR
Sulphuric Acid (>50%)	NR	NR	NR	R ¹⁶	NR	NR	R	R	NR	NR	NR	NR
Sulphuric Acid (70%)	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Sulphuric Acid (95%)	R	NR	NR	R	NR	NR	R	NR	NR	R ¹⁵	NR	NR
Sulphuric Acid, Fuming	R	R ²	NR	R	R	NR	R	R	NR	R ²	R ²	NR
Tannic Acid (10%)	R	R	R	R	R	R	R	R	R	R	R	NR
Tartaric Acid	R	R	R	R	R	R	R	R	R	NR	NR	NR
Trichloroethylene	R ⁵	R ⁵	R ⁵	R ⁵	R ⁵	R ⁵	R ⁵	R ⁵	R ⁵	R ⁵	R ⁵	R ⁵
Urea (30%)	R	R	R	R	R	R	R	R	R	R	R	R
Water, Pure	R	R	R	R	R	R	R	R	R	R	R	R
Yeast	R	R	R	R	R	R	R	R	R	R	R	R

PITTING & CREVICE CORROSION RESISTANCE

Exposure in chloride containing media can result in localised corrosion.
In order of increasing resistance to localised corrosion: 3CR12 <304L <316L

CORROSION RESISTANCE DATA



AVOIDING PITTING AND CREVICE CORROSION

CONDITIONS:

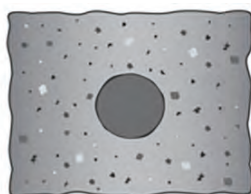
- Design vessels for complete drainage - avoid sharp corners and stagnant areas.
- Close crevices and lap joints by continuous welding.
- Remove solids in suspension. Prevent sedimentation. Ensure continuous agitation and adequate flow rates.
- Use compressive non-absorbent gaskets or inert sealing compounds.
- Ensure non-impairment of passive surface. Repair/restore any affected areas.

NOTES:

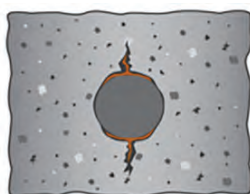
1. Not if chlorides present
2. Limited data
3. Depends upon the acid
4. Dry acid fumes, attack may occur if moisture builds up
5. Anhydrous
6. Depends upon concentration
7. May discolour with time
8. In strong solutions only when inhibited
9. Pitting possible in stagnant conditions
10. Possibility of pitting
11. May cause stress corrosion cracking
12. When free of SO₂
13. May cause contamination of product
14. Dilute hypochlorites can be used to sterilise some stainless steel with extreme care
15. General corrosion may become excessive
16. 10%
17. On the absence of impurities
18. Dilute
19. Some attack at high temperatures



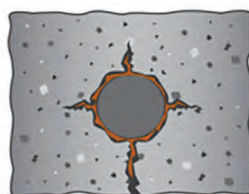
CORROSION IN STEEL



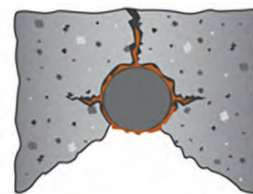
BEFORE CORROSION.



BUILD-UP OF
CORROSION PRODUCTS.



FURTHER CORROSION.
SURFACE CRACKS.
STAINS.



EVENTUAL SPALLING.
CORRODED BAR.
EXPOSED.



EQUIVALENTS OF STANDARD WIRE GAUGES



NO.	INCH	mm
1	0.300	7.620
2	0.276	7.010
3	0.252	6.400
4	0.232	5.890
5	0.212	5.380
6	0.192	4.880
7	0.176	4.470
8	0.160	4.060
9	0.144	3.660
10	0.128	3.250
11	0.116	2.950
12	0.104	2.640
13	0.092	2.340
14	0.080	2.030
15	0.072	1.830
16	0.064	1.630
17	0.056	1.420
18	0.048	1.220
19	0.040	1.020
20	0.036	0.914
21	0.032	0.813

NO.	INCH	mm
22	0.028	0.711
23	0.024	0.610
24	0.022	0.559
25	0.020	0.508
26	0.018	0.457
27	0.016	0.417
28	0.015	0.376
29	0.014	0.345
30	0.012	0.315
31	0.012	0.295
32	0.011	0.274
33	0.010	0.254
34	0.009	0.234
35	0.008	0.213
36	0.008	0.193
37	0.007	0.173
38	0.006	0.152
39	0.005	0.132
40	0.005	0.122
41	0.004	0.112
42	0.004	0.102

USEFUL CONVERSION FORMULAE

- Circumference of a circle = diameter x 22/7 (or 3.1416)
- Area of a circle = square of the diameter x 0.7854
- Area of a square, rhombus or rhomboid = base x height
- Area of a triangle = 1/2 base x perpendicular height
- Area of a trapezium = 1/2 sum of two parallel sides x height
- Area of any rectilinear figure of four or more unequal sides is found by dividing it into triangles, finding the area of each, and adding together
- Area of any regular polygon = 1/2 radius of inscribed circle x length of sides x number of sides
- Area of a parabola = base x height x 2/5
- Area of an ellipse = long axis x short axis x 0.7854
- Surface of a prism or cylinder = area of two ends + (length x perimeter); volume = area of base x height
- Surface of a cone or pyramid = 1/2 (slant height x perimeter of base) + area of base; volume = 1/3 (area of base x perpendicular height)
- Surface of a cube or parallelepiped = sum of areas of all sides; volumes = length x breadth x depth
- Surface of a sphere = square of diameter x 3.1416; volume = cube of diameter x 0.5236
- Area of a sector of a circle = length of arc x 1/2 radius
- Area of a segment of a circle = area of a sector less area of a triangle
- Side of a square of area equal to a circle = diameter x 0.8862
- Diameter of a circle equal in area to a square = side x 1.1284
- Area of a regular hexagon = 0.8661 x (width across flats)²; width of flats
- Area of a regular octagon = 0.8284 x (width across flats)²; width of flat = 0.4142 x width across flats



NEED MORE HELP

If you haven't found the answer to your technical question by browsing our website, you are welcome to contact one of our technical experts. You will be redirected to a form where you can ask your question. A representative will respond within 24 hours (on week days).

FRACTIONS OF INCHES






WITH THEIR DECIMAL & MILLIMETRE EQUIVALENTS

INCH	INCH / DECIMAL	mm
1/64	0.01562	0.397
1/32	0.0312	0.794
3/64	0.04687	1.191
1/16	0.0625	1.588
5/64	0.07812	1.984
3/32	0.0937	2.381
7/64	0.10937	2.778
1/8	0.125	3.175
9/64	0.14062	3.572
5/32	0.1562	3.969
11/64	0.17187	4.366
3/16	0.1875	4.763
13/64	0.20312	5.159
7/32	0.21875	5.556
15/64	0.23437	5.953
1/4	0.25	6.35
17/64	0.26562	6.747
9/32	0.28125	7.144
19/64	0.29687	7.541
5/16	0.3125	7.937
21/64	0.32812	8.334
11/32	0.34375	8.731

INCH	INCH / DECIMAL	mm
23/64	0.35937	9.128
3/8	0.375	9.525
25/64	0.39062	9.922
13/32	0.40625	10.319
27/64	0.42187	10.716
7/16	0.4375	11.112
29/64	0.45312	11.509
15/32	0.46875	11.906
31/64	0.48437	12.303
1/2	0.5	12.7
33/64	0.51562	13.097
17/32	0.53125	13.494
35/64	0.54687	13.891
9/16	0.5625	14.287
37/64	0.57812	14.684
19/32	0.59375	15.081
39/64	0.60937	15.478
5/8	0.625	15.875
41/64	0.64062	16.272
21/32	0.65625	16.669
43/64	0.67187	17.066

INCH	INCH / DECIMAL	mm
11/16	0.6875	17.462
45/64	0.70312	17.859
23/32	0.71875	18.256
47/64	0.73437	18.653
3/4	0.75	19.05
49/64	0.76562	19.447
25/32	0.78125	19.844
51/64	0.79687	20.241
13/16	0.8125	20.637
53/64	0.82812	21.034
27/32	0.84375	21.431
55/64	0.85937	21.828
7/8	0.875	22.225
57/64	0.89062	22.622
29/32	0.90625	23.019
59/64	0.92187	23.416
15/16	0.9375	23.812
61/64	0.95312	24.209
31/32	0.96875	24.606
63/64	0.98437	25.003
1/1	1	25.4

THEORETICAL MASS CALCULATION

SECTION	DIAGRAM	FORMULA x SPEC	ALU	BRASS	BRONZE	COPPER	STEEL	STAINLESS
Round		D x D x	0.002132	0.006675	0.006924	0.00701	0.00616	0.00631
Hollow		(D - t) x	0.0085	0.026	0.02778	0.028	0.02466	0.0253
Flat		W x t x	0.002712	0.00848	0.00882	0.00889	0.00786	0.00804
Square		S x S x	0.002712	0.00848	0.00882	0.00889	0.00786	0.00804
Hexagon		H x H x	0.00235	0.007344	0.007638	0.00776	0.0068	0.006963

HARDNESS COMPARISON TABLE

VICKERS' HARDNESS (DPH)	BRINELL HARDNESS 10mm DIAM BALL LOAD: 3000kg			ROCKWELL HARDNESS (2)				ROCKWELL SPECIAL HARDNESS SPECIAL BRALE EQUIPMENT			SHORE HARDNESS	TENSILE STRENGTH (100sq/m2 approx)	VICKERS' HARDNESS LOAD 50kg
	STD BALL	HULTGREN BALL	TUNGSTIC CARBIDE BALL	A - SCALE LOAD: 60kg BRALE EQUIP	B - SCALE LOAD: 100kg 1/16 INCH DIAM BALL	C - SCALE LOAD: 150kg BRALE EQUIP	D - SCALE LOAD: 100kg BRALE EQUIP	15-N SCALE LOAD: 15kg	30-N SCALE LOAD: 15kg	45-N SCALE LOAD: 15kg			
410	388	388	388	71.4	-	41.8	56.8	81.4	61.1	45.3	-	195	410
400	379	379	379	70.8	-	40.8	56	81	60.2	44.1	55	190	400
390	369	369	369	70.3	-	39.8	55.2	80.3	59.3	42.9	-	185	390
380	360	360	360	69.8	-110	38.8	54.4	79.8	58.4	41.7	52	180	380
370	350	350	350	69.2	-	37.7	53.6	79.2	57.4	40.4	-	175	370
360	341	341	341	68.7	-109	36.6	52.8	78.6	56.4	39.1	50	170	360
350	331	331	331	68.1	-	35.5	51.9	78	55.4	37.8	-	166	350
340	322	322	322	67.6	-108	34.4	51.1	77.4	54.4	36.5	47	161	340
330	313	313	313	67	-	33.3	50.2	76.8	53.6	35.2	-	156	330
320	303	303	303	66.4	-107	32.2	49.4	76.2	52.3	33.9	45	151	320
310	294	294	294	65.8	-	31	48.4	75.6	51.3	32.5	-	146	310
300	284	284	284	65.2	-105.5	29.8	47.5	74.9	50.2	31.1	42	141	300
295	280	280	280	64.8	-	29.2	47.1	74.6	49.7	30.4	-	139	295
290	275	275	275	64.5	-104.5	28.5	46.5	74.2	49	29.5	41	136	290
285	270	270	270	64.2	-	27.8	46	73.8	48.4	28.7	-	134	285
280	265	265	265	63.8	-103.5	27.1	45.3	73.4	47.8	27.9	40	131	280
275	261	261	261	63.5	-	26.4	44.9	73	47.2	27.1	-	129	275
270	256	256	256	63.1	-102	25.4	44.3	72.6	46.4	26.2	38	126	270
265	252	252	252	62.7	-	24.8	43.7	72.1	45.7	25.2	-	124	265
260	247	247	247	62.4	-101	24	43.1	71.6	45	24.3	37	121	260
255	243	243	243	62	-	23.1	42.2	71.1	44.2	23.2	-	119	255
250	238	238	238	61.6	99.5	22.2	41.7	70.6	43.4	22.2	36	116	250
245	233	233	233	61.2	-	21.3	41.1	70.1	42.5	21.1	-	114	245
240	228	228	228	60.7	98.1	20.3	40.3	69.6	41.7	19.9	34	110	240
230	219	219	219	-	96.7	-18	-	-	-	-	33	106	230
220	209	209	209	-	95	-15.7	-	-	-	-	32	101	220
210	200	200	200	-	93.4	-13.4	-	-	-	-	30	97	210
200	190	190	190	-	91.5	-11	-	-	-	-	29	92	200
190	181	181	181	-	89.4	-8.5	-	-	-	-	28	88	190
180	171	171	171	-	87.1	-6	-	-	-	-	26	84	180
170	162	162	162	-	85	-3	-	-	-	-	25	79	170
160	152	152	152	-	81.7	0	-	-	-	-	24	75	160
150	143	143	143	-	78.7	-	-	-	-	-	22	71	150
140	133	133	133	-	75	-	-	-	-	-	21	66	140
130	124	124	124	-	71.2	-	-	-	-	-	20	62	130
120	114	114	114	-	66.7	-	-	-	-	-	-	57	120
110	105	105	105	-	62.3	-	-	-	-	-	-	-	110
100	95	95	95	-	56.2	-	-	-	-	-	-	-	100
95	90	90	90	-	52	-	-	-	-	-	-	-	95
90	86	86	86	-	48	-	-	-	-	-	-	-	90
85	81	81	81	-	41	-	-	-	-	-	-	-	85

NOMINAL COMPOSITION OF SOME COMMON GRADES OF STAINLESS STEEL



NOTES

Similar grades (on a basis of composition only) from the ASTM and EN Standards are grouped together.

1. Nominal compositions are given in this table. These must not be used for specification purposes. For the exact composition, reference must be made to the appropriate specification.

2. The % content is a maximum unless a compositional range is given.

3. Common Elements

- Al = Aluminium
- C = Carbon
- Cr = Chromium
- Cu = Copper
- Mn = Manganese
- Mo = Molybdenum
- N = Nitrogen
- Nb = Niobium (as Cb = Columbium in American Specifications)
- Ni = Nickel
- P = Phosphorus
- S = Sulphur
- Se = Selenium
- Si = Silicon
- Ti = Titanium
- V = Vanadium



4. Only the primary alloying elements (C, Cr, Ni, Mo and N) are individually listed in the table.

5. All stainless steels contain Si, Mn, P and S. These are controlled to maximum contents of typically 0.75% or 1.0% Si, 2.0% Mn, 0.015% S, 0.045%P. If these elements are intentionally added as alloying elements the higher % content is listed under \"% Other\".

6. The % content of any other alloying elements that are contained in some of the stainless steels is listed under \"% Other\".

7. Typical Proprietary Grades (which are commonly referred to in South Africa) are given for the purpose of example only. The inclusion of any such Proprietary Grade must not be interpreted as an endorsement or recommendation; and vice versa, the exclusion of any such Proprietary Grade must not be interpreted as a non-recommendation.

Austenitic Stainless Steels and Austenitic Stainless Alloys

Grade Number	UNS Number Grade Designation	% C	% Cr	% Ni	% Mo	% N	% Other
201	S20100	0.15	16.0-18.0	3.5-5.5	-	0.25	5.5-7.5 Mn
1.4372	X12CrMnNiN 17-7-5	0.15	16.0-18.0	3.5-5.5	-	0.05-0.25	5.5-7.5 Mn
201L	S20103	0.03	16.0-17.0	3.5-3.5	-	0.25	5.5-7.5 Mn
1.4371	X2CrMnNiN 17-7-5	0.03	16.0-18.0	3.5-5.5	-	0.15-0.25	6.0-8.0 Mn
202	S20200	0.15	17.0-19.0	4.0-6.0	-	0.25	7.5-10.0 Mn
1.4373	X12CrMnNiN 18-9-5	0.15	17.0-19.0	4.0-6.0	-	0.05-0.25	7.5-10.5 Mn
CROMANITE		0.08	18.0-20.0	1	-	0.4-0.6	9.5-11.5 Mn
301	S30100	0.15	16.0-18.0	6.0-8.0	-	0.1	-
1.431	X10CrNi 18-8	0.05 - 0.15	16.0-19.0	6.0-9.5	0.8	0.11	-
1.4318	X2CrNi 18-7	0.03	16.5-18.5	6.0-8.0	-	0.10-0.20	-
303	S30300	0.15	17.0-19.0	8.0-10.0	-	-	>0.15 S (Free machining properties)
1.4305	X8CrNiS 18-9	0.1	17.0-19.0	8.0-10.0	-	0.11	0.15-0.35 S (Free machining properties)
303Se	S30323	0.15	17.0-19.0	8.0-10.0	-	-	0.06 S & >0.15 Se (Free machining properties)

Grade Number	UNS Number Grade Designation	% C	% Cr	% Ni	% Mo	% N	% Other
304	S30400	0.08	18.0-20.0	8.0-10.5	-	0.10	-
1.4301	X5CrNi 18-10	0.07	17.0-19.5	8.0-10.5	-	0.11	-
304L	S30403	0.03	18.0-20.0	10.0-12.0	-	0.10	-
1.4306	X2CrNi 19-11	0.03	18.0-20.0	10.0-12.0	-	0.11	-
304LN	S30453	0.03	18.0-20.0	8.0-12.0	-	0.10-0.16	-
1.4311	X2CrNiN 18- 10	0.03	17.0-19.0	8.5-11.5	-	0.12-0.22	-
304H	S30409	0.04 - 0.10	18.0-20.0	8.0-10.5	-	-	-
1.4948	X6CrNi 18-10	0.04 - 0.08	17.0-19.0	8.0-11.0	-	0.11	-
305	S30500	0.12	17.0-19.0	10.5-13.0	-	-	-
1.4303	X4CrNi 18-12	0.06	17.0-19.0	11.0-13.0	-	0.11	-
309	S30900	0.2	22.0-24.0	12.0-15.0	-	-	-
1.4828	X15CrNiSi 20-12	0.2	19.0-21.0	11.0-13.0	-	0.11	1.5-2.0 Si
309S	S30908	0.08	22.0-24.0	12.0-15.0	-	-	-
1.4833	X12CrNi 23-13	0.15	22.0-24.0	12.0-14.0	-	0.11	-
310	S31000	0.25	24.0-26.0	19.0-22.0	-	-	1.5 Si
1.4841	X15CrNiSi 25-21	0.2	24.0-26.0	19.0-22.0	-	0.11	1.5-2.5 Si
310S	S31008	0.08	24.0-26.0	19.0-22.0	-	-	1.5Si
1.4845	X8CrNi 25-21	0.1	24.0-26.0	19.0-22.0	-	0.11	1.5Si
310MoLN	S31050	0.02	24.0-26.0	20.5-23.5	1.6-2.6	0.09-0.15	-
1.4466	X1CrNiMoN 25-22-2	0.02	24.0-26.0	21.0-23.0	2.0-2.5	0.10-0.16	-
*253MA	S30815	0.12	20	10		0.12	1.4 Si, Ce
1.4835							
316	S31600	0.08	16.0-18.0	10.0-14.0	2.0-3.0	0.1	-
1.4401	X5CrNiMo 17-12-2	0.07	16.5-18.5	10.0-13.0	2.0-2.5	0.11	-
1.4436	X3CrNiMo 17-13-3	0.05	16.5-18.5	10.5-13.0	2.5-3.0	0.11	-
316L	S31603	0.03	16.0-18.0	10.0-14.0	2.0-3.0	0.1	-
1.4404	X2CrNiMo 17-12-2	0.03	16.5-18.5	10.0-13.0	2.0-2.5	0.11	-
1.4432	X2CrNiMo 17-12-3	0.03	16.5-18.5	10.5-13.0	2.5-3.0	0.11	-
1.4435	X2CrNiMo 18-14-3	0.03	17.0-19.0	12.5-15.0	2.5-3.0	0.11	-
316LN	S31653	0.03	16.0-18.0	10.0-14.0	2.0-3.0	0.10-0.16	-
1.4406	X2CrNiMoN 17-11-2	0.03	16.5-18.5	10.0-12.0	2.0-2.5	0.12-0.22	-
1.4429	X2CrNiMoN 17-13-3	0.03	16.5-18.5	11.0-14.0	2.5-3.0	0.12-0.22	-
316Ti	S31635	0.08	16.0-18.0	10.0-14.0	2.0-3.0	0.1	(5x[%C+%N])-0.7 Ti
1.4571	X6CrNiMoTi 17-12-2	0.08	16.5-18.5	10.5-13.5	2.0-2.5	-	(5x%C)-0.7 Ti
316Cb	S31640	0.08	16.0-18.0	10.0-14.0	2.0-3.0	-	(10x%C)-1.1 Cb
1.458	X6CrNiMoNb 17-12-2	0.08	16.5-18.5	10.5-13.5	2.0-2.5	-	(10x%C)-1.0 Nb
317L	S31703	0.03	18.0-20.0	11.0-15.0	3.0-4.0	0.1	-
1.4438	X2CrNiMo 18-15-4	0.03	17.5-19.5	13.0-16.0	3.0-4.0	0.11	-
~ ~ ~	S31726	0.03	17.0-20.0	13.5-17.5	4.0-5.0	0.10-0.20	-
1.4439	X2CrNiMoN 17-13-5	0.03	16.5-18.5	12.5-14.5	4.0-5.0	0.12-0.22	-
317LN	S31753	0.03	18.0-20.0	11.0-15.0	3.0-4.0	0.10-0.22	-
1.4434	X2CrNiMoN 18-12-4	0.03	16.5-19.5	10.5-14.0	3.0-4.0	0.10-0.20	-
321	S32100	0.08	17.0-19.0	9.0-12.0	-	0.1	-
1.4541	X6CrNiTi 18-10	0.08	17.0-19.0	9.0-12.0	-	-	(5x[%C+%N])-0.7 Ti
347	S34700	0.08	17.0-19.0	9.0-13.0	-	-	(5x%C)-0.7 Ti
1.455	X6CrNiNb 18-10	0.08	17.0-19.0	9.0-12.0	-	-	(10x%C)-1.1 Cb
*254 SMO	S31254	0.02	19.5	17.5	6	0.18	0.5 Cu
1.4547							
~ ~ ~	SN08904	0.02	19.0-23.0	23.0-28.0	4.0-5.0	0.1	1.0-2.0 Cu
1.4539	X1NiCrMoCu 25-20-5	0.02	19.0-21.0	24.0-26.0	4.0-5.0	0.15	1.2-2.0 Cu
Typical similar proprietary grades:- 904L ~ Cronifer 1925LC ~ 2RK65 ~ Uranus B6							
~ ~ ~	N08925/6	0.02	19.0-21.0	24.0-26.0	6.0-7.0	0.15-0.25	0.5-1.5 Cu
1.4529	X1NiCrMoCuN 25-20-7	0.02	19.0-21.0	24.0-26.0	6.0-7.0	0.15-0.25	0.5-1.5 Cu

Typical similar proprietary grades:- Cronifer 1925hMo ~ 25-6Mo ~ Uranus B26

Grade Number	UNS Number Grade Designation	% C	% Cr	% Ni	% Mo	% N	% Other
~ ~ ~	N08028	0.03	26.0-28.0	29.5-32.5	3.0-4.0	-	0.6-1.4 Cu
1.4563	X1NiCrMoCu 31-27-4	0.02	26.0-28.0	30.0-32.0	3.0-4.0	0.11	0.7-1.5 Cu
Typical similar proprietary grades:- Nicrofer 3127LC ~ Sanicro 28							
~ ~ ~	N08020	0.07	19.0-21.0	32.0-38.0	2.0-3.0	-	(8x%C)-1.0 Cb & 3.0-4.0 Cu
2.466	NiCr 20 CuMo	0.05	19.0-21.0	36.0-39.0	2.0-3.0	-	(8x%C)-1.0 Nb & 3.0-4.0 Cu
Typical similar proprietary grades:- Alloy 20Cb3 ~ Nicrofer 3620Nb ~ Inco alloy 20							
~ ~ ~	N08825	0.05	19.5-23.5	38.0-46.0	2.5-3.5	-	0.6-1.2 Ti & 1.5-3.0 Cu & 0.20 Al
Typical similar proprietary grades:- Incoloy 825 ~ Nicrofer 4221							
2.4858	NiCr 21 Mo	0.025	19.5-23.5	38.0-46.0	2.5-3.5	-	0.6-1.2 Ti & 1.5-3.0 Cu & 0.20 Al
~ ~ ~	N08330 & N08332	0.1	17.0-20.0	34.0-37.0	-	-	0.75-1.50 Si & 1.0 Cu
1.4864	X12NiCrSi 35-16	0.15	15.0-17.0	33.0-37.0	-	0.11	1.0-2.0 Si
Typical similar proprietary grades:- Incoloy DS ~ Nicrofer 3718							
~ ~ ~	N08800 & N08811	0.1	19.0-23.0	30.0-35.0	-	-	39.5 Fe(min) & 0.15-0.60 Ti & 0.15-0.60 Al
1.4876	X10NiCrAlTi 32-21	0.12	19.0-23.0	30.0-34.0	-	-	0.15-0.60 Ti & 0.15-0.60 Al

Typical similar proprietary grades:- Incoloy 800 & 800HT ~ Nicrofer 3220 & 3220H ~ Uranus 800 & 800H

* Chemical composition minimum values

Ferritic Stainless Steels

Grade Number	UNS Number Grade Designation	% C	% Cr	% Ni	% Mo	% N	% Other
3CR12™	-	0.03	11.0-12.0	1.5	-	0.03	0.6Ti
1.4003	X2CrNi 12	0.03	10.5-12.5	0.3-1.0	-	0.03	-
~ ~ ~	S40910	0.03	10.5-11.7	0.5	-	0.03	(6x[%C+%N])-0.5 Ti & 0.17 Cb
1.4512	X2CrTi 12	0.03	10.5-12.5	-	-	-	(6x[%C+%N])-0.65 Ti
430	S43000	0.12	16.0-18.0	0.75	-	-	-
1.4016	X6Cr 17	0.08	16.0-18.0	-	-	-	-
1.4509	X2CrTiNb18	0.03	17.5-18.5	-	-	0.045	0.10-0.60 Ti & (0.3+[3x%C])-1.0 Nb
439	S43035	0.07	17.0-19.0	0.5	-	0.04	(0.2+4x[%C+%N])-1.1 Ti & 0.15Al
1.451	X3CrTi 17	0.05	16.0-18.0	-	-	-	(0.15+4x[%C+%N])-0.80 Ti
444	S44400	0.025	17.5-19.5	1	1.8-2.5	0.035	(0.20+4x[%C+%N])-0.80 Ti+Cb
1.4521	X2CrMoTi 18-2	0.025	17.0-20.0	-	1.8-2.5	0.03	(0.15+4x[%C+%N])-0.8 Ti
446	S44600	0.2	23.0-27.0	0.75	-	0.25	-
1.4762	X10CrAlSi25	0.12	23.0-26.0	-	-	-	1.2-1.7 Al & 0.7-1.4 Si

Martensitic Stainless Steels

Grade Number	UNS Number Grade Designation	% C	% Cr	% Ni	% Mo	% N	% Other
410	S41000	0.15	11.5-13.5	-	-	-	-
1.4006	X12Cr 13	0.08-0.15	11.5-13.5	0.75	-	-	-
416	S41600	0.15	12.0-14.0	-	-	-	>0.15 S (Free machining properties)
1.4005	X12CrS 13	0.08-0.15	12.0-14.0	-	0.6	-	0.15-0.35 S (Free machining properties)
420	S42000	>0.15	12.0-14.0	-	-	-	-
1.4021	X20Cr 13	0.16-0.25	12.0-14.0	-	-	-	-
431	S43100	0.2	15.0-17.0	1.25-2.50	-	-	-
1.4057	X17CrNi 16-2	0.12-0.22	15.0-17.0	1.5-2.5	-	-	-
440A	S44002	0.60-0.75	16.0-18.0	-	0.75	-	-
440B	S44003	0.75-0.95	16.0-18.0	-	0.75	-	-
1.4112	X90CrMoV 18	0.85-0.95	17.0-19.0	-	0.9-1.3	-	0.07-0.12 V
440C	S44004	0.95-1.20	16.0-18.0	-	0.75	-	-
1.4125	X105CrMo 17	0.95-1.20	16.0-18.0	-	0.4-0.8	-	-

Duplex Stainless Steels

Grade Number	UNS Number Grade Designation	% C	% Cr	% Ni	% Mo	% N	% Other
2304	S32304	0.03	21.5-24.5	3.0-5.5	0.1-0.6	0.05-0.20	0.05-0.6 Cu
1.4362	X12CrNiN 23	0.03	22.0-24.0	3.5-5.5	0.1-0.6	0.05-0.20	0.1-0.6 Cu
Typical similar proprietary grades: SAF2304 ~ 2304							
~ ~ ~	S31803	0.03	21.0-23.0	4.5-6.5	2.5-3.5	0.08-0.20	-
2205	S32205	0.03	22.0-23.0	4.5-6.5	3.0-3.5	0.14-0.20	-
1.4462	X2CrNiMoN 22-5-3	0.03	21.0-23.0	4.5-6.5	2.5-3.5	0.10-0.22	-
Typical similar proprietary grades: SAF2205 ~ 2205 ~ Uranus 45N							
2507	S32750	0.03	24.0-26.0	6.0-8.0	3.0-5.0	0.24-0.35	-
1.441	X2CrNiMoN 25-7-4	0.03	24.0-26.0	6.0-8.0	3.0-4.5	0.20-0.35	-
Typical similar proprietary grades: SAF2507 ~ 2507 ~ Uranus 47N							
*LDX 2101	S32101	0.03	21.5	1.5	0.3	0.22	5.0 Mn
1.4162							-
*LDX 2404	S82441	0.02	24	3.6	1.6	0.27	3.0 Mn
1.4662							-
*DX 2202	S32202	0.025	23	2.5	<0.30	0.2	1.3 Mn
1.4062*	X2CrNiN 22-2						-
255	S32550	0.04	24.0-27.0	4.5-6.5	2.9-3.9	0.10-0.25	1.5-2.5 Cu
1.4507	X2CrNiMoCu 25-6-3	0.03	24.0-26.0	5.5-7.5	2.7-4.0	0.15-0.30	1.0-2.5 Cu

Typical similar proprietary grades: Ferralium 255-3SF ~ Uranus 52N

* Typical Composition %

Precipitation Hardenable (PH) Stainless Steels

Grade Number	UNS Number Grade Designation	% C	% Cr	% Ni	% Mo	% N	% Other
630	S17400	0.07	15.0-17.5	3.0-5.0	-	-	3.0-5.0 Cu & 0.1-0.5 Cb
1.4542	X5CrNiCuNb 16-4	0.07	15.0-17.0	3.0-5.0	0.6	-	3.0-5.0 Cu & (5xC)-0.45 Nb
Typical similar proprietary grade: 17-4PH							
631	S17700	0.09	16.0-18.0	6.5-7.75	-	-	0.7-1.5 Al
1.4568	X7CrNiAl 17-7	0.09	16.0-18.0	6.5-7.8	-	-	0.7-1.5 Al
Typical similar proprietary grade: 17-7PH							
632	S15700	0.09	14.0-16.0	6.5-7.75	2.0-3.0	-	0.7-1.5 Al
1.4532	X8CrNiMoAl15-7-2	0.1	14.0-16.0	6.5-7.8	2.0-3.0	-	0.7-1.5 Al

Typical similar proprietary grade: PH 15-7Mo



PIPE WORKING PRESSURE



NOMINAL WORKING PRESSURES

APPLY

BARLOWS FORMULA

Figures shown in tables are nominal working pressures for seamless pipe under constant operating conditions. Where pressures or temperature fluctuations occur, increased safety factors should be adopted. Listed are factors of safety recommended for varying pressure conditions.

□ 5 to bursting pressure for no pressure fluctuations

□ 8 to bursting pressure for small/regular pressure fluctuations

□ 12 to bursting pressure for small/regular fluctuations

* Tensile strength of 304 at room temperature

NOMINAL WORKING PRESSURES CHART - GENERAL AUSTENITIC GRADES

CONVERSION TABLE

Megapascal	1.00
Bar	10.00
kgf/cm2	10.20
Kilopascal	1000.00
Hectopascal	10000.00
Millibar	10000.00
kgf/m2	101971.60
Pascal	1000000.00

P = Pressure Rating (MPa)

S = Minimum tensile strength (MPa) (S= 517MPa)*

t = Wall Thickness (mm)

D = Outside Diameter of Pipe (mm)

NOTE: The figures given for nominal working pressures & factor of safety are for quick reference purposes only. Detailed design calculations should be in accordance with the applicable design standard

NOTE: This chart is based on a nominal safety factor of 4 and applies to seamless pipe only.

Nominal Bore Size		Temp °C																																							
		Schedule 10S														Schedule 40S														Schedule 80S											
mm	In	50	100	150	200	250	300	350	400	50	100	150	200	250	300	350	400	50	100	150	200	250	300	350	400	50	100	150	200	250	300	350	400								
6	0.125	30.1	26.8	23.4	21.7	20.2	19.2	18.5	17.9	42.1	37.3	32.6	30.3	28.2	26.7	25.9	25	58.6	52	45.5	42.2	39.3	37.3	36	34.8	25	58.6	52	45.5	42.2	39.3	37.3	36	34.8							
8	0.25	30.1	26.8	23.4	21.7	20.2	19.2	18.5	17.9	40.9	36.3	31.8	29.5	27.5	26	25.2	24.3	55.2	49	42.8	39.7	37	35.1	33.9	32.8	24.3	55.2	49	42.8	39.7	37	35.1	33.9	32.8							
10	0.375	24.1	21.4	18.7	17.4	16.2	15.4	14.9	14.4	33.8	30	26.2	24.3	22.7	21.5	20.8	20.1	46.8	41.6	36.4	33.7	31.4	29.8	28.8	27.8	20.1	46.8	41.6	36.4	33.7	31.4	29.8	28.8	27.8							
15	0.5	24.8	22	19.2	17.9	16.6	15.8	15.3	14.7	32.5	28.9	25.3	23.4	21.8	20.7	20	19.3	43.8	38.9	34	31.6	29.4	27.9	27	26	19.3	43.8	38.9	34	31.6	29.4	27.9	27	26							
20	0.75	19.8	17.6	15.4	14.2	13.3	12.6	12.2	11.8	26.9	23.9	20.9	19.4	18.1	17.1	16.6	16	36.6	32.5	28.4	26.4	24.6	23.3	22.6	21.8	16	36.6	32.5	28.4	26.4	24.6	23.3	22.6	21.8							
25	1	20.8	18.4	16.1	14.9	13.9	13.2	12.8	12.3	25.3	22.5	19.7	18.2	17	16.1	15.6	15.1	34.1	30.3	26.5	24.6	22.9	21.7	21	20.3	15.1	34.1	30.3	26.5	24.6	22.9	21.7	21	20.3							
32	1.25	16.4	14.6	12.8	11.8	11	10.5	10.1	9.8	21.1	18.7	16.4	15.2	14.2	13.4	13	12.5	28.8	25.5	22.3	20.7	19.3	18.3	17.7	17.1	12.5	28.8	25.5	22.3	20.7	19.3	18.3	17.7	17.1							
40	1.5	14.4	12.7	11.1	10.3	9.6	9.1	8.8	8.5	19.1	16.9	14.8	13.7	12.8	12.1	11.7	11.3	26.3	23.4	20.4	19	17.7	16.7	16.2	15.6	11.3	26.3	23.4	20.4	19	17.7	16.7	16.2	15.6							
50	2	11.5	10.2	8.9	8.3	7.7	7.3	7.1	6.8	16.2	14.4	12.6	11.7	10.9	10.3	10	9.6	23	20.4	17.8	16.6	15.4	14.6	14.1	13.7	9.6	23	20.4	17.8	16.6	15.4	14.6	14.1	13.7							
65	2.5	10.5	9.3	8.1	7.5	7	6.7	6.4	6.2	17.7	15.7	13.7	12.7	11.9	11.3	10.9	10.5	24	21.3	18.7	17.3	16.1	15.3	14.8	14.3	10.5	24	21.3	18.7	17.3	16.1	15.3	14.8	14.3							
80	3	8.6	7.6	6.7	6.2	5.8	5.5	5.3	5.1	15.5	13.7	12	11.1	10.4	9.8	9.5	9.2	21.5	19.1	16.7	15.5	14.4	13.7	13.2	12.8	9.2	21.5	19.1	16.7	15.5	14.4	13.7	13.2	12.8							
90	3.5	7.5	6.7	5.8	5.4	5	4.8	4.6	4.5	14.1	12.6	11	10.2	9.5	9	8.7	8.4	19.9	17.7	15.4	14.3	13.4	12.7	12.2	11.8	8.4	19.9	17.7	15.4	14.3	13.4	12.7	12.2	11.8							
100	4	6.7	5.9	5.2	4.8	4.5	4.2	4.1	4	13.2	11.7	10.2	9.5	8.8	8.4	8.1	7.8	18.7	16.6	14.5	13.5	12.6	11.9	11.5	11.1	7.8	18.7	16.6	14.5	13.5	12.6	11.9	11.5	11.1							
125	5	6	5.3	4.7	4.3	4	3.8	3.7	3.6	11.6	10.3	9	8.4	7.8	7.4	7.1	6.9	16.9	15	13.1	12.2	11.3	10.7	10.4	10	6.9	16.9	15	13.1	12.2	11.3	10.7	10.4	10							
150	6	5.1	4.5	3.9	3.6	3.4	3.2	3.1	3	10.6	9.4	8.2	7.6	7.1	6.7	6.5	6.3	16.3	14.5	12.7	11.7	11	10.4	10	9.7	6.3	16.3	14.5	12.7	11.7	11	10.4	10	9.7							
200	8	4.3	3.8	3.3	3.1	2.9	2.7	2.6	2.6	9.3	8.3	7.3	6.7	6.3	5.9	5.7	5.6	14.5	12.9	11.3	10.4	9.7	9.2	8.9	8.6	5.6	14.5	12.9	11.3	10.4	9.7	9.2	8.9	8.6							
250	10	3.8	3.4	3	2.8	2.6	2.4	2.4	2.3	8.5	7.5	6.6	6.1	5.7	5.4	5.2	5	11.6	10.3	9	8.4	7.8	7.4	7.2	6.9	5	11.6	10.3	9	8.4	7.8	7.4	7.2	6.9							
300	12	3.5	3.1	2.7	2.5	2.4	2.2	2.2	2.1	7.4	6.5	5.7	5.3	4.9	4.7	4.5	4.4	9.8	8.7	7.6	7.1	6.6	6.2	6	5.8	4.4	9.8	8.7	7.6	7.1	6.6	6.2	6	5.8							

Nominal working pressures are shown in MPa • Nominal working pressures for welded pipe can be calculated by multiplying the figure in the tables by 0.85 (weld joint efficiency factor).



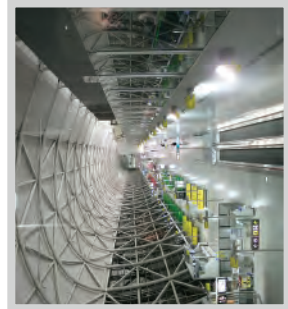
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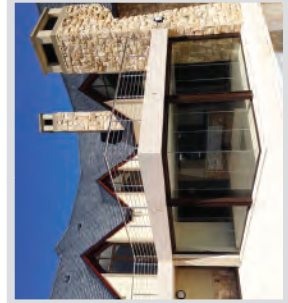


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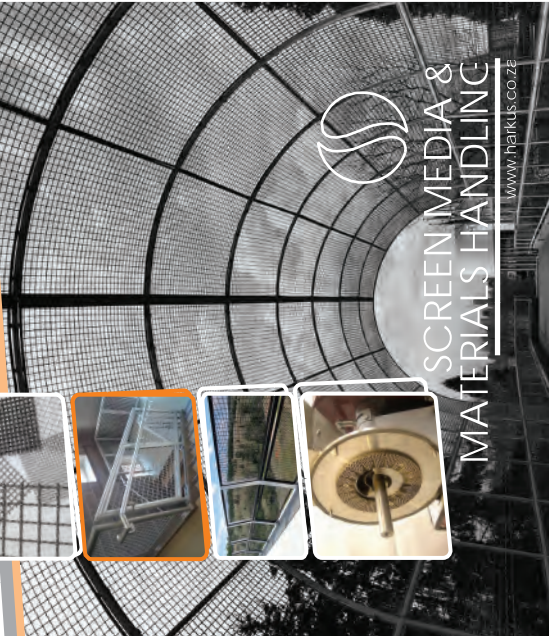
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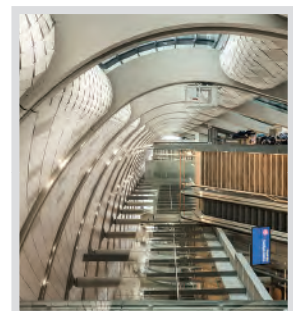




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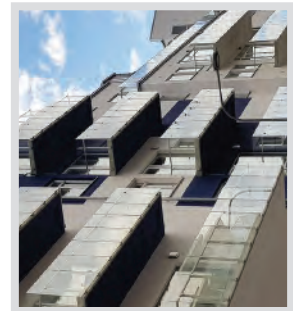
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