



**Stainless Steel:**

Plate - Sheet - Angle - Flat - Round - Square Tube - RHS

Wire Mesh - Round Dairy Tube - Dairy Fittings

Tri Clamp Fittings - Bends - Reducers - Tees

Channel - Pipe - Butt Weld Pipe Fittings

BSP Fittings - Ball Valves BSP

**6 Oropuriri Rd NEW PLYMOUTH**

**Phone: 06 755 4896 - Fax: 06 755 4894**

# **NEW PLYMOUTH STAINLESS SUPPLIES**

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## STEEL PLATE

Manufactured to - ASTM A240/480

PLATE DIMENSIONS mm (Thickness x Width x Length)	THEORETICAL WEIGHT kgs/plate	304		316		3Cr12	2205 (Duplex)	253 MA (Hi Temp)
		2B	No. 1	2B	No. 1	No. 1	2E	2E
4.00 x 1200 x 2400	92.16	•		•				
4.00 x 1500 x 3000	144.00	•		•		•	•	•
4.00 x 2000 x 4000	256.00	•	•	•				
5.00 x 1200 x 2400	115.20	•		•				
5.00 x 1500 x 3000	180.00	•	•	•		•	•	•
5.00 x 1500 x 6000	360.00	•						
5.00 x 2000 x 4000	320.00	•		•				
6.00 x 1200 x 2400	138.24	•		•				
6.00 x 1500 x 3000	216.00	•	•	•		•		
6.00 x 1500 x 6000	432.00					•		
6.00 x 2000 x 4000	384.00	•		•				
6.00 x 2000 x 6000	576.00	•						
8.00 x 1500 x 3000	288.00		•		•			
8.00 x 2000 x 4000	512.00		•		•			
10.00 x 1500 x 3000	360.00		•		•			
10.00 x 2000 x 4000	640.00		•		•			
12.00 x 1500 x 3000	432.00		•		•			
12.00 x 2000 x 4000	678.00		•		•			
16.00 x 1500 x 3000	576.00		•		•			
20.00 x 1500 x 3000	720.00		•		•			
25.00 x 1500 x 3000	900.00		•		•			
30.00 x 1500 x 3000	1080.00		•		•			
38.00 x 1500 x 3000	1368.00		•		•			
50.00 x 1500 x 3000	1800.00		•		•			

## STAINLESS STEEL SHEET

Manufactured to ASTM - A240

SHEET DIMENSIONS mm (Thickness x Width x Length)	THEORETICAL WEIGHT kgs/sheet	304.00				316.00		430.00		3cr12
		2B	BA	Satin	Super Mirror	2B	Satin - Low Ra	BA	Satin	No.1
0.45 x 1219 x 2438	10.70	•	•							
0.55 x 915 x 2438	9.82	•								
0.55 x 1219 x 2438	13.08	•	•	•		•		•	•	
0.70 x 915 x 2438	12.49	•	•	•						
0.70 x 1219 x 2438	16.64	•	•	•		•	•	•	•	
0.70 x 1219 x 3048	20.81	•		•		•	•			
0.90 x 915 x 2438	16.06	•	•	•						
0.90 x 915 x 3048	20.08	•		•						
0.90 x 915 x 3658	24.10	•		•						
0.90 x 1219 x 2438	21.40	•	•	•	•	•	•	•	•	
0.90 x 1219 x 3048	26.75	•	•	•						
0.90 x 1219 x 3658	32.11	•	•	•						
0.90 x 1500/1524 x 3048	33.45	•		•						
0.90 x 1500/1524 x 3658	40.13	•								
1.20 x 915 x 3438	21.42	•	•	•						
1.20 x 915 x 3048	26.77	•	•	•						
1.20 x 915 x 3658	32.13	•	•	•						
1.20 x 915 x 4000	35.13	•	•	•						
1.20 x 915 x 4500	39.60		•	•						
1.20 x 915 x 5000	43.90			•						
1.20 x 1219 x 2438	28.53	•	•	•		•	•	•	•	
1.20 x 1219 x 3048	35.67	•	•	•		•	•			
1.20 x 1219 x 3658	42.81	•	•	•		•	•			
1.20 x 1219 x 4000	46.80	•		•						
1.20 x 1219 x 4500	52.60		•							
1.20 x 1219 x 5000	58.51	•	•	•						
1.20 x 1500/1524 x 2438	35.66	•		•						
1.20 x 1500/1524 x 3048	44.50	•		•		•	•			
1.20 x 1500/1524 x 3658	53.51	•		•		•	•			
1.50 x 915 x 2438	26.78	•	•	•						
1.50 x 915 x 3048	33.47	•	•	•						
1.50 x 915 x 3658	40.16	•	•	•						
1.50 x 915 x 4000	43.92	•		•						
1.50 x 915 x 5000	54.90	•		•						
1.50 x 1219 x 2438	35.66	•	•	•	•	•	•			
1.50 x 1219 x 3048	44.59	•	•	•		•	•			
1.50 x 1219 x 3658	53.51	•	•	•		•	•			
1.50 x 1219 x 4000	58.51	•		•						
1.50 x 1219 x 5000	73.14	•		•						
1.50 x 1500/1524 x 2438	54.00	•		•						
1.50 x 1500/1524 x 3048	55.74	•		•		•	•			
1.50 x 1500/1524 x 3658	66.70	•		•		•	•			
1.50 x 1500/1524 x 4000	73.15	•								



**STAINLESS STEEL SHEET**

**Manufactured to - ASTM A240**

SHEET DIMENSIONS mm (Thickness x Width x Length)	THEORETICAL WEIGHT kgs/sheet	304.00				316.00		430.00		3cr12
		2B	BA	Satin	Super Mirror	2B	Satin - Low Ra	BA	Satin	No.1
2.00 x 915 x 2438	35.69	•		•						
2.00 x 915 x 3048	44.62	•		•						
2.00 x 915 x 3658	53.55	•		•						
2.00 x 1219 x 2438	47.55	•		•		•	•			
2.00 x 1219 x 3048	59.45	•		•		•	•			
2.00 x 1219 x 3658	71.35	•		•		•	•			
2.00 x 1219 x 4000	78.01	•		•						
2.00 x 1500/1524 x 3048	75.32	•		•		•	•			
2.00 x 1500/1524 x 3658	88.08	•		•		•	•			
2.00 x 2000 x 4000	128.00	•								
2.50 x 1219 x 2428	59.44	•		•		•	•			
2.50 x 1219 x 3048	74.31	•		•		•	•			
2.50 x 1219 x 2658	89.18	•		•						
2.50 x 1500/1524 x 3048	92.90	•		•						
2.50 x 1500/1524 x 3658	111.50	•		•		•	•			
2.50 x 2000 x 4000	160.00	•								
3.00 x 1219 x 2438	71.33	•		•		•	•			
3.00 x 1219 x 3048	89.17	•		•		•	•			
3.00 x 1219 x 3658	107.00	•		•						
3.00 x 1500/1524 x 3048	111.48	•		•		•				•
3.00 x 1500/1524 x 3658	132.12	•		•		•				
3.00 x 2000 x 4000	192.00	•								

## STAINLESS STEEL ANGLE BAR

Manufactured to - ASTM A276

METRIC SIZE (mm)	THEORETICAL WEIGHT kgs/m	304	316
3.00 x 20 x 20	0.888	•	
3.00 x 25 x 25	1.128	•	•
3.00 x 30 x 30	1.300	•	•
3.00 x 40 x 40	1.800	•	•
3.00 x 50 x 50	2.380	•	•
4.00 x 50 x 50	3.040	•	
5.00 x 25 x 25	1.800	•	•
5.00 x 30 x 30	2.200	•	•
5.00 x 40 x 40	3.000	•	•
5.00 x 50 x 50	3.800	•	•
5.00 x 75 x 75	5.844	•	
6.00 x 25 x 25	2.122	•	
6.00 x 30 x 30	2.592	•	
6.00 x 40 x 40	3.552	•	•
6.00 x 50 x 50	4.512	•	•
6.00 x 65 x 65	5.952	•	•
6.00 x 75 x 75	6.912	•	•
6.00 x 100 x 100	11.752	•	•
9.00 x 65 x 65	8.712	•	
9.00 x 75 x 75	10.152	•	•
10.00 x 100 x 100	15.200	•	•

\* Approximate Lengths: 6 meters



**STAINLESS STEEL FLAT BAR - Metric**  
**Manufactured to - ASTM A276/484**

METRIC SIZE (mm)	THEORETICAL WEIGHT kgs/m	304		316	
		SRE	HRAP	SRE	HRAP
3.00 x 12	0.282	•		•	
3.00 x 20	0.470	•			
3.00 x 25	0.588	•		•	
3.00 x 30	0.753	•			
3.00 x 40	0.894	•	•	•	
3.00 x 50	1.176	•	•	•	•
3.00 x 75	1.764	•			
3.00 x 100	2.352	•			
5.00 x 20	0.784		•	•	•
5.00 x 25	0.980		•	•	•
5.00 x 30	1.190		•		
5.00 x 40	1.490		•	•	•
5.00 x 50	1.960	•	•	•	•
5.00 x 65	2.470	•	•		
5.00 x 75	2.940		•		
5.00 x 100	3.921		•		
6.00 x 20	0.941	•	•		
6.00 x 25	1.176		•	•	•
6.00 x 30	1.430		•	•	•
6.00 x 40	1.788	•	•	•	•
6.00 x 50	2.352		•	•	•
6.00 x 65	2.964		•		
6.00 x 75	3.528		•	•	•
6.00 x 100	4.705		•	•	•
6.00 x 150	7.057		•		
6.00 x 200	9.480	•	•		
6.00 x 250	11.850	•	•		
6.00 x 300	14.220	•	•		
8.00 x 25	1.568		•		•
8.00 x 40	2.508		•		•
8.00 x 50	3.136		•		•
8.00 x 75	4.704		•		•
8.00 x 100	6.272		•		•
10.00 x 25	1.960		•		•
10.00 x 30	2.352		•		
10.00 x 40	2.980		•		•
10.00 x 50	3.921		•		•
10.00 x 65	4.940		•		•
10.00 x 75	5.881		•		•
10.00 x 100	7.841		•		•
10.00 x 150	11.762	•	•		
10.00 x 200	15.682		•		
10.00 x 250	19.604		•		
10.00 x 300	23.524		•		



**STAINLESS STEEL ROUND BAR - Imperial**  
**Manufactured to - ASTM A276**

DIAMETER Inch	THEORETICAL WEIGHT kgs/m	FREE MACHINING			
		303	304	316	2205
1/8"	0.062	•	•**	•**	
3/16"	0.140	•	•**		
1/4"	0.250	•	•	•	
5/16"	0.390	•	•	•	
3/8"	0.562	•	•	•	
7/16"	0.764		•		
1/2"	0.998	•	•	•	
9/16"	1.265				
5/8"	1.562		•	•	
3/4"	2.246	•	•	•	
7/8"	3.065		•	•	
1"	3.988	•	•	•	
1 1/16"	4.500				
1 1/8"	5.029	•		•	
1 1/4"	6.209	•	•	•	
1 3/8"	7.469				
1 1/2"	8.939	•	•	•	
1 5/8"	10.491				
1 3/4"	12.168			•	
2"	15.892		•	•	
2 1/4"	20.115			•	
2 3/8"	22.422				
2 1/2"	24.833		•	•	
2 3/4"	30.048	•		•	
3"	35.758	•		•	





**STAINLESS STEEL ROUND BAR - Metric**  
**Manufactured to - ASTM A276**

DIAMETER mm	THEORETICAL WEIGHT kgs/m	FREE MACHINING			
		303	304	316	2205
3	0.06		•**		
4	0.10		•**		
5	0.15		•	•	
6	0.24	•	•	•	
8	0.42	•	•	•	
10	0.62	•	•	•	
12	0.88	•	•	•	
16	1.58	•	•	•	
18	2.02			•	
20	2.47	•	•	•	
22	3.04			•	
25	3.85	•	•	•	
30	5.55	•	•	•	
35	7.55		•	•	
40	9.87		•	•	
45	12.50		•	•	
50	15.41		•	•	
60	22.20		•	•	
65	26.00		•	•	
70	30.10		•	•	
75	35.30		•	•	
80	40.86		•	•	
90	50.00		•	•	
95	53.00		•	•	
100	63.00		•		
110	77.00		•	•	
120	89.35		•	•	
130	101.85		•	•	
150	140.75		•	•	
160	150.95		•	•	
180	199.90			•	
200	244.00			•	



**TABLE OF TOLERANCES**

**ISO H-J-K**

H - Minus Tolerance

Example - #45 H9 = +0-0.062

J - Plus/Minus Tolerances

Example - #45 J9 = +0.031-0.031

K - Plus Tolerance

Example - #45 K9 = +0-0.064

Standard stock tolerance H9/H10

**Dependent on diameter**

DIAMETERS mm	H - TOLERANCES (mm)						
	7	8	9	10	11	12	13
> 1 to 3 inclusive	0.009	0.014	0.025	0.040	0.060	0.090	0.140
> 3 to 6 inclusive	0.012	0.018	0.030	0.048	0.075	0.120	0.180
> 6 to 10 inclusive	0.015	0.022	0.036	0.058	0.090	0.150	0.220
> 10 to 18 inclusive	0.018	0.027	0.043	0.070	0.110	0.180	0.270
> 18 to 30 inclusive	0.021	0.033	0.052	0.084	0.130	0.210	0.330
> 30 to 50 inclusive	0.025	0.039	0.062*	0.100	0.160	0.250	0.390
> 50 to 80 inclusive		0.046	0.074	0.120	0.190	0.300	0.460
> 80 to 120 inclusive			0.087	0.140	0.220	0.350	0.540
> 120 to 180 inclusive			0.100	0.160	0.250	0.400	0.630
> 180 to 250 inclusive			0.115	0.185	0.290	0.460	0.720
> 250 to 315					0.320	0.520	0.810
> 315 to 400					0.336	0.570	0.890
> 100 to 500					0.400	0.630	0.970
> 500					0.440	0.700	1.100

## STAINLESS STEEL SQUARE TUBE

Manufactured to - ASTM - A554 (6 metre lengths) (Structural applications only)

SIZE (O/D) (mm)	WALL THICKNESS	WEIGHT Kg/Mtr	T304		T316	
			POL	AW	POL	AW
12.7 x 12.7	1.2	0.468	•			
19.0 x 19.0	1.2	0.672	•			
19.0 x 19.0	1.5	0.881	•		•	
25.4 x 25.4	1.2	0.920	•			
25.4 x 25.4	1.5	1.210	•		•	
31.8 x 31.8	1.2	1.118	•			
31.8 x 31.8	1.5	1.868	•	•	•	
35.0 x 35.0	1.5	1.770	•			
38.1 x 38.1	1.2	1.412	•	•		
38.1 x 38.1	1.5	1.868	•		•	
40.0 x 40.0	2.0	2.560	•			
40.0 x 40.1	3.0	3.750			•	
50.8 x 50.8	1.5	2.487	•		•	
50.8 x 50.8	2.0	3.264	•			
50.8 x 50.8	3.0	4.870	•		•	
60.0 x 60.0	2.0	3.840	•			
60.0 x 60.0	3.0	5.760	•			
76.2 x 76.2	1.5	3.630	•	•		
76.2 x 76.2	2.0	4.742	•	•		
76.2 x 76.2	4.5	11.630		•		
80.0 x 80.0	2.0	5.120	•	•		
80.0 x 80.0	3.0	7.680	•		•	
100.0 x 100.0	3.0	9.600	•		•	
101.6 x 101.6	4.5	15.040		•		
152.4 x 152.4	4.5	22.000		•		

• Finish: A/W As Welded    Welded are only Linished

POL - Polished    Architectural Finish (180 Grit) - T304

Architectural Finish (320 Grit) - T316



**STAINLESS STEEL R.H.S**

**Manufactured to - ASTM - A554 (6 Metre Lengths) (Structural applications only)**

SIZE (O/D) (MM)	WALL THICKNESS	WEIGHT Kg/Mtr	T304		T316	
			POL	AW	POL	AW
40.0 X 10.0	1.5	0.510		•		
40.0 X 20.0	1.6	1.020	•			
40.0 X 20.0	2.0	1.636	•			
50.0 X 10.0	1.5	0.740	•			
50.0 X 25.0	1.6	1.868	•		•	
50.0 X 25.0	2.0	2.490	•			
59.0 X 15.0	2.0	2.370	•			
80.0 X 20.0	1.5	2.480	•			
80.0 X 40.0	2.0	3.840	•		•	
80.0 X 40.0	3.0	5.760	•		•	
80.0 X 40.0	5.0	9.600	•		•	
100.0 X 50.0	3.0	7.200	•		•	
100.0 X 50.0	5.0	12.000	•		•	
101.6 X 50.8	4.5	11.440		•		
150.0 X 100.0	4.0	15.400	•			
150.0 X 100.0	6.0	23.400	•			
152.40 X 101.6	4.5	18.560		•		
200.0 X 100.0	4.0	18.300	•			
200.0 X 100.0	6.0	27.000	•			
200.0 X 150.0	4.0	21.600	•			
200.0 X 150.0	6.0	32.300		•		

- Finish: A/W As Welded    Welded are only Linished
- POL - Polished    Architectural Finish (180 Grit) - T304
- Architectural Finish (320 Grit) - T316

## STAINLESS STEEL WIRE MESH - PLAIN WEAVE

Grade: 304

Wire Dia: Wire Diametre

Aperture: Distance between parallel wire threads, measured in mm

Open Area: Gives the percentage of open area in a standard wire mesh

NB For aperture dimensions in microns - 1mm = 1000 microns

Mesh No.	Wire Dia (mm)	Aperture (mm)	Open Area (%)	Weight (kg/m <sup>2</sup> )	Roll width (mm)	Roll length (m)
2	0.890	11.81	86.5	0.77	1000	30
4	0.890	5.46	74.0	1.53	1220	30
6	0.810	3.43	65.6	1.91	1220	30
6	1.190	3.05	51.8	4.11	1220	30
8	0.890	2.29	51.8	3.07	1220	30
10	0.584	1.96	59.3	1.65	1000	30
12	0.584	1.52	51.8	1.98	1220	30
16	0.457	1.13	50.7	1.62	1220 / 1550	30
20	0.406	0.86	46.2	1.60	1220	30
22	0.340	0.81	49.6	1.23	1500	30
30	0.229	0.62	53.1	0.76	1220	30
40	0.203	0.43	46.2	0.77	1220	30
50	0.180	0.33	41.9	0.78	1000	30
30	0.140	0.28	44.4	0.57	1000	30
80	0.121	0.20	38.8	0.60	1000	30
100	0.101	0.153	36.0	0.48	1000	300

Sold per Lineal Metre, cut across the width of the roll. Minimum order 1 metre.

Other sizes, weave patterns & Grade 316 mcan be sources on request.

## STAINLESS STEEL WIRE MESH - WELDED (coils)

Grade: 304

Mesh No: Indicates the number of mesh (holes) within a lineal inch

Wire Dia: Wire Diametre

Aperture: Distance between parallel wire threads, measured in mm

Open Area: Gives the percentage of open area in a standard wire mesh

Mesh No.	Wire Dia (mm)	Aperture (mm)	Open Area (%)	Weight (kg/m <sup>2</sup> )	Roll width (mm)	Roll length (m)
2	1.19	11.51	82.1	1.37	1000	30
4	0.81	5.54	76	1.27	1000	30

Sold per Lineal Metre, cut across the width of the roll. Minimum order 1 metre.

Other sizes, weave patterns & Grade 316 mcan be sources on request.

## STAINLESS STEEL WIRE MESH - HEAVY GAUGE WELDED (sheets)

Suppliers range includes

Wire diameters from 2-6mm

Square/Pitch dimensions (wire spacings - centre to centre in mm)  
from 25-100mm

304 and 316 stainless steel is available in stome instances.

**\*Sourced to Order - Please check availability**

## STAINLESS STEEL ROUND STRUCTURAL TUBE

Manufactured to - ASTM - A554

SIZE (O/D) (mm)	WALL THICKNESS	THEORETICAL WEIGHT Kg/Mtr	T304			T316			2205	EXHAUST TUBING
			320	600	800	320	600	800	AW	409aS
9.5	1.2	0.250	•							
12.7	1.6	0.445					•			
15.8	1.2	0.445		•			•			
15.8	1.6	0.577		•			•			
19.0	1.2	0.542		•			•			
19.0	1.6	0.697		•			•	•		
22.1	1.2	0.638		•			•			
22.1	1.5	0.825		•			•			
25.4	1.2	0.735		•			•			
25.4	1.6	0.965	•	•			•	•	•	
31.8	1.2	0.920		•						
31.8	1.6	1.210	•	•			•	•	•	
38.1	1.6	1.458	•	•			•	•	•	•
38.1	3.0	2.900		•						
40.0	1.2	1.170					•			
44.5	1.2	1.301		•			•			
44.5	1.6	1.719	•	•			•	•		•
50.8	1.6	2.000	•	•			•	•	•	•
50.8	2.0	2.447		•	•		•			
50.8	3.0	4.000				•				
63.5	1.6	2.480	•	•			•	•	•	
63.5	3.0	4.000					•			
76.1	1.6	2.984	•	•			•		•	
101.6	1.6	4.005	•	•			•		•	
152.0	2.0	8.333					•			

\* Some sizes not stocked are available on Indent

\* Standard Length - 6.0 metres

\* "L" Grade can be supplied on request in both T304 and T316 Round or Square Tube

\* Finish: A/W - As Welded

Welded are only Linished

POL - Buff Polished

Surfaced Linished to a range of 320/600/800 grit

\* Other finishes available on request



### STAINLESS STEEL ROUND DAIRY TUBE

Manufactured to - ASTM - A269/A270 AS1528 (Food/Hygienic Applications)

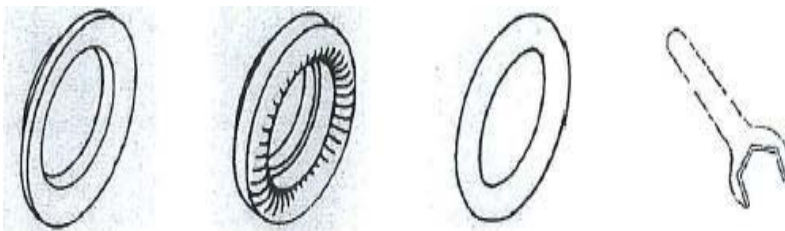
SIZE (O/D) (mm)	WALL THICKNESS	THEORETICAL WEIGHT Kg/Mtr	T304		T316	T317	2205	EXHAUST TUBING	DOMESTIC WATER
			180	AW	180	AW	AW	409AW	TUBE AW
6.3	0.90	0.122	•						
7.9	0.90	0.158	•						
9.5	0.90	0.194	•						
9.5	1.20	0.250	•		•				
12.7	0.90	0.276	•						
12.7	1.20	0.346	•						
12.7	1.60	0.445	•		•				
14.7	0.90	0.315		•					
15.8	0.90	0.341	•						
15.8	1.20	0.445	•						
15.8	1.60	0.577	•		•				
19.0	0.90	0.408	•						
19.0	1.20	0.542	•		•	•			
19.0	1.60	0.697	•		•		•		
22.1	0.90	0.482	•						
22.1	1.20	0.638	•	•		•			•
22.1	1.50	0.825	•						
25.4	0.90	0.552	•						
25.4	1.20	0.735	•		•				
25.4	1.60	0.965	•		•		•		
28.6	1.60	1.066	•		•				
31.8	0.90	0.697	•						
31.8	1.20	0.920	•						
31.8	1.60	1.210	•		•				
38.1	0.90	0.836	•						
38.1	1.20	1.106	•						
38.1	1.60	1.458	•		•		•	•	
44.5	1.60	1.719	•		•				
50.8	1.20	1.496	•						
50.8	1.60	2.000	•		•		•		
50.8	2.00	2.447	•						
63.5	0.90	1.440		•					
63.5	1.20	1.872	•						
63.5	1.60	2.480	•	•	•		•		
63.5	2.00	3.730					•		
76.1	1.60	2.984	•		•				
76.1	2.00	3.730	•				•		
76.1	3.00	5.970			•				
88.9	1.60	3.680	•						
101.6	1.60	4.005	•		•				
101.6	2.00	4.995	•				•		
127.0	1.60	4.970	•		•				
152.0	1.60	5.910	•	•	•				
152.0	2.00	8.333	•		•				

**STAINLESS STEEL DAIRY FITTINGS**

Manufactured to BS 1804, 1134 and A1528



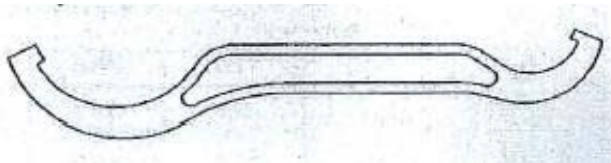
	HEX NUT	ROUND NUT	MALE PART	C.I.P WELD LINER	C.I.P SEAL
25.4mm	•	•	•	•	•
38.0mm	•	•	•	•	•
51.0mm	•	•	•	•	•
53.5mm	•	•	•	•	•
76.1mm	•	•	•	•	•
101.6mm	•	•	•	•	•
152.4mm		•	•	•	•



	BLANK	TEFLON SEAL	"O" RING	HEX SPANNER
25.4mm	•	•	•	•
38.0mm	•	•	•	•
51.0mm	•	•	•	•
63.5mm	•	•	•	•
76.1mm	•	•	•	•
101.6mm	•	•	•	•
152.4mm	•	•	•	

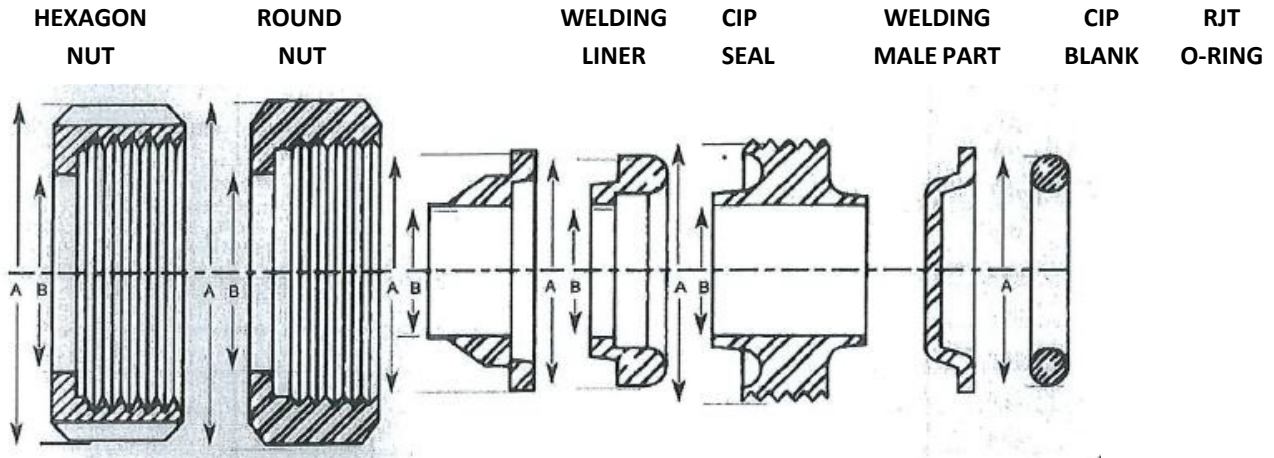
**25mm - 101mm ROUNDNUT**

**"C" SPANNER**



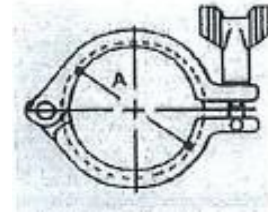


**TECHNICAL DATA**



TUBE SIZE	HEX NUT STAINLESS STEEL TYPE 304		ROUND NUT STAINLESS STEEL TYPE 30		WELDING LINER STAINLESS STEEL TYPE 316		C.I.P SEAL NITRILE RUBBER		MALE PART STAINLESS STEEL TYPE 316		RJT SEAL NITRILE RUBBER "O" RING
	A	B	A	B	A	B	A	B	A	B	A
	1"	58.00	34.00	56.80	34.00	41.27	22.00	39.67	22.90	45.72	22.00
1 1/2"	75.00	46.60	73.80	46.60	53.90	34.84	52.40	34.84	58.12	34.84	52.40
2"	92.00	59.40	85.60	59.40	66.67	47.60	65.10	46.76	72.42	47.60	65.10
2 1/2"	108.00	73.20	97.10	73.20	79.50	60.05	77.80	59.40	85.12	60.05	77.80
3"	121.00	84.40	111.50	84.40	92.07	73.00	90.50	72.10	97.82	73.00	90.50
4"	152.00	110.10	139.00	110.10	117.47	98.40	115.90	97.50	123.20	98.40	115.90
5"			172.00	137.00	142.00	123.00	140.00	123.00	147.00	123.00	
6"			200.00	162.80	167.50	147.50			173.20	147.50	173.20

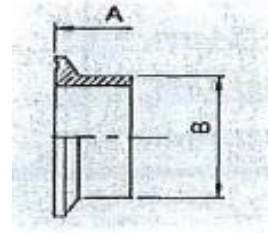
**STAINLESS STEEL TRI-CLAMP FITTINGS**



**HEAVY DUTY CLAMPS (3A-MHH)**

SIZE (OD) mm

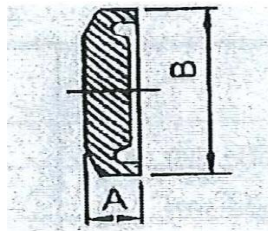
	12.7	19	25.4	38.1	50.8	63.5	76.1	101.6	152.4
A	28.20	28.20	53.90	53.90	66.50	80.90	94.40	122.40	170.00



**BUTT WELDING FERRULE (3A-14MMP)**

SIZE (OD) mm

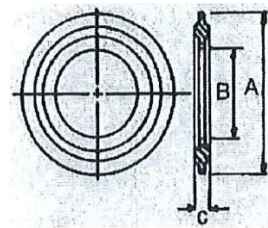
	12.7	19	25.4	38.1	50.8	63.5	76.1	101.6	152.4
A	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5
B	12.7	19.0	25.4	38.1	50.8	63.5	76.1	101.6	152.4



**SOLID END CAP (3A-16AMP)**

SIZE (OD) mm

	12.7	19	25.4	38.1	50.8	63.5	76.1	101.6	152.4
A	5.00	5.00	6.40	6.40	6.40	6.40	6.40	7.90	11.00
B	12.7	19	25.4	38.1	50.8	63.5	76.1	101.6	152.4



**SEAL**

SIZE (OD) mm

	12.7	19.0	25.4	38.1	51.0	63.5	76.1	101.6	152.4
A	21.8	21.8	50.4	50.4	63.9	77.4	90.9	118.9	167.0
B	9.9	16.3	22.2	34.9	47.5	60.2	72.9	97.4	147.0
C	5.15	5.15	5.15	5.15	5.15	5.15	5.15	5.15	5.15

## DIMENSIONS OF 45°, 90°, 180° BENDS

Table 1 - NEW ZEALAND

OD SIZE		GAUGE	R	A	B
(mm)	(imp)	(mm)	(mm)	(mm)	(mm)
12.7	1/2	1.2	25.4	44.5	19.1
15.9	5/8	1.2	25.4	57.2	31.80
19.1	3/4	1.2/1.6	34.9	63.5	28.60
25.4	1	1.2/1.6	44.5	66.7	22.20
31.8	1 1/4	1.2/1.6	57.2	88.9	31.80
38.1	1 1/2	1.2/1.6	76.2	111.1	34.90
44.5	1 3/4	1.2/1.6	79.4	117.5	38.10
50.8	2	1.2/1.6	101.6	133.4	31.80
63.5	2 1/2	1.6	114.3	152.4	38.10
76.2	3	1.6	139.7	177.8	38.10
101.6	4	1.6	152.4	182.4	25.40
152.4	6	2.0	228.6	260.4	31.80

**NOTE:** For 180° bends dimension "R" specified above may vary slightly due to the variation in temper of mill supplied tube. Where dimension "R" is critical, for intended use, please consult New PlymouthStainless Supplies to determine the exact dimension, when ordering.

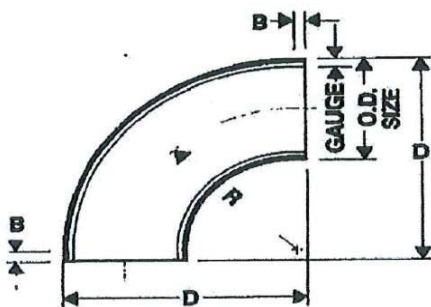
### DIMENSIONS OF 90° SHORTRADIUS

TABLE 2 - NEW ZEALAND  
NOMINAL

OD SIZE		GAUGE	R	D	B
(mm)	(imp)	(mm)	(mm)	(mm)	(mm)
25.4	1	1.6	38.1	51x51	0.0
31.8	1 1/4	1.6	47.6	76x76	12.7
38.1	1 1/2	1.6	57.2	71x71	-4.8
50.8	2	1.6	76.2	101x101	0.0
63.5	2 1/2	1.6	101.6	133x133	0.0
76.2	3	1.6	114.3	165x165	12.7
101.6	4	1.6	152.4	216x216	12.7

### 90° Short Radius New Zealand Dimensions

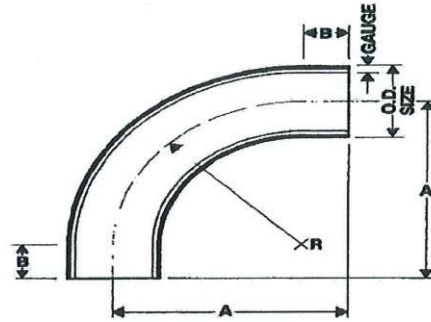
For dimensions refer to Table 2



### BENDS

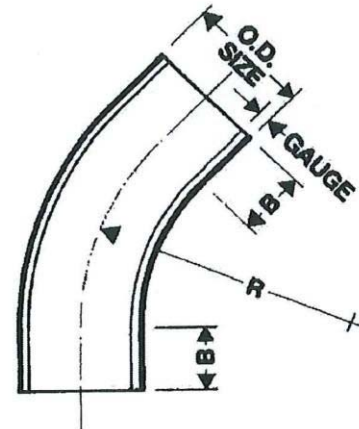
#### 90° New Zealand Dimensions

For dimensions R, A and B, refer to Table 1



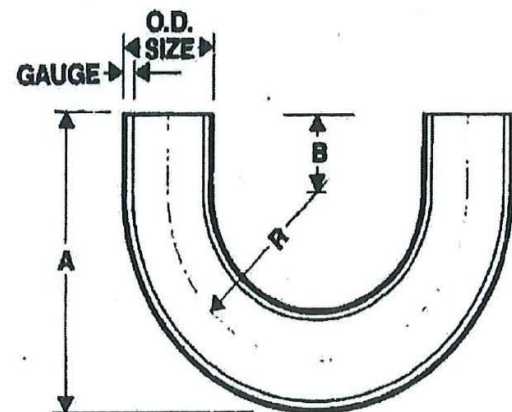
#### 45° New Zealand Dimensions

For dimensions R and B, refer to Table 1

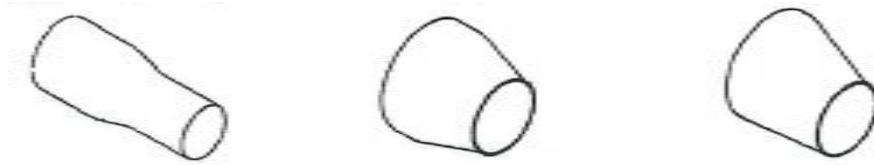


#### 180° New Zealand Dimensions

For dimensions R, A and B, refer to Table 1



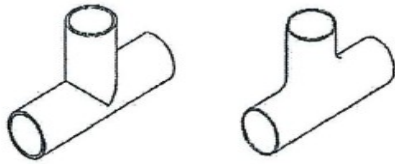
### STAINLESS STEEL TUBE REDUCER



SIZE (mm)	CONCENTRIC				ECCENTRIC	
	316 EXT. LEG	304*	316	2205	304*	316
19.0 - 12.7 x 1.6			•			
25.4 - 12.7 x 1.6			•			
25.4 - 19.0 x 1.6			•			
31.8 - 25.4 x 1.6	•		•			
38.0 - 25.4 x 1.6			•	•		•
38.0 - 31.8 x 1.6	•		•			
51.0 - 25.4 x 1.6			•	•		•
51.0 - 38.0 x 1.6	•		•	•		•
63.5 - 38.0 x 1.6			•			•
63.5 - 51.0 x 1.6			•	•		•
76.1 - 25.4 x 1.6			•			
76.1 - 38.0 x 1.6			•			
76.1 - 51.0 x 1.6			•	•		•
76.1 - 63.5 x 1.6			•	•		•
101.6 - 51.0 x 1.6			•			
101.6 - 63.5 x 1.6			•			•
101.6 - 76.1 x 1.6			•	•		•
152.4 - 101.6 x 1.6			•	•		•

\*On request

**STAINLESS STEEL WELDING TEES**



SIZE (mm)	STANDARD TEES		SWEPT TEES
	304	316	316
12.7 x 1.6		•	
16.0 x 1.2	•		
16.0 x 1.6		•	
19.0 x 1.6	•	•	
25.4 x 1.6	•	•	•
31.8 x 1.6	•	•	•
38.0 x 1.6	•	•	•
44.5 x 1.6		•	•
51.0 x 1.6	•	•	•
63.5 x 1.6	•	•	•
76.1 x 1.6	•	•	•
101.6 x 1.6	•	•	•
152.4 x 1.5	•	•	

**OTHER SIZES AVAILABLE ONREQUEST**  
**I/D SIZES AVAILABLE ONREQUEST**  
**NOTE: When necessary thickness of**  
**material may alter**  
**TUBE CROSS X "Y" PIECE FITTINGS AVAILABLE**



SIZE (mm)	AS DRAWN			LONG LEG TEE	
	340	316	2205	304	316
25.4 X 1.6		•	•		
31.8 X 1.6		•		•	
38.0 X 1.2					
38.0 X 1.6		•	•	•	
51.0 X 1.6		•	•	•	
63.5 X 1.6		•	•	•	
76.1 X 1.6		•	•		
101.6 X 1.6		•	•		
152.4 X 2.0		•			

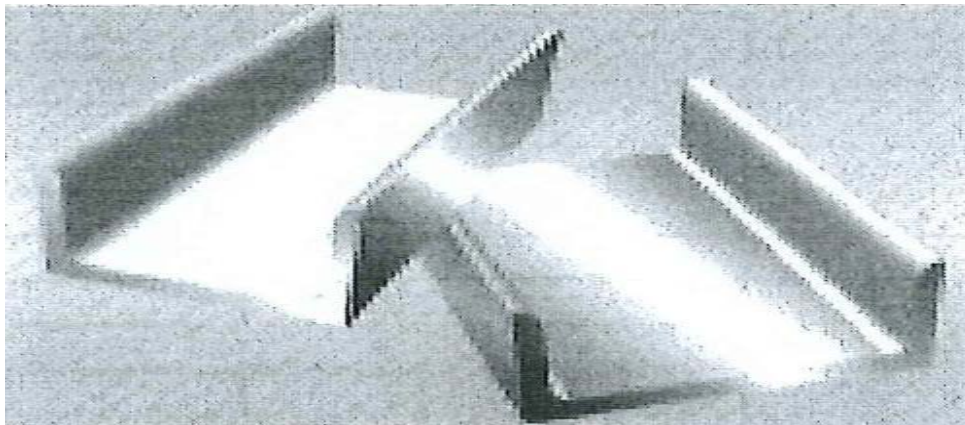
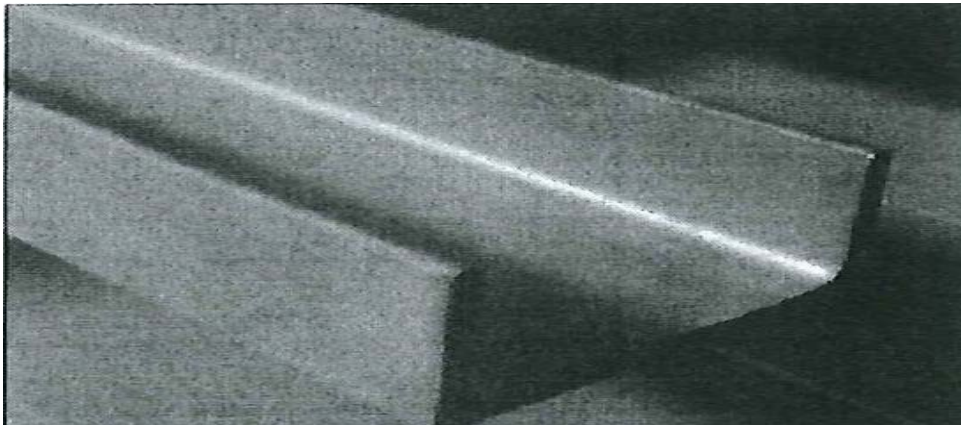
**AS DRAWN REDUCING TEES ALSO AVAILABLE**

**STAINLESS STEEL CHANNELS**

**Manufactured to - ASTM A276/484**

CROSS SECTION DIMENSIONS (mm) Web x Flange x Thickness	THEORETICAL WEIGHT kgs/m	CORNER RAIUS (Internal mm)	304	316
80 x 40 x 5	6.000	4.50	•	•
100 x 50 x 6	9.000	6.50	•	•
130 x 65 x 6	11.900	8.50	•	
150 x 75 x 6	14.100	8.50	•	•

- Hot Rolled, Annealed and Pickled
- Lengths: 3 metre and 6 metre lengths available





**STAINLESS STEEL PIPE**

**WELDED / SEAMLESS PIPE**

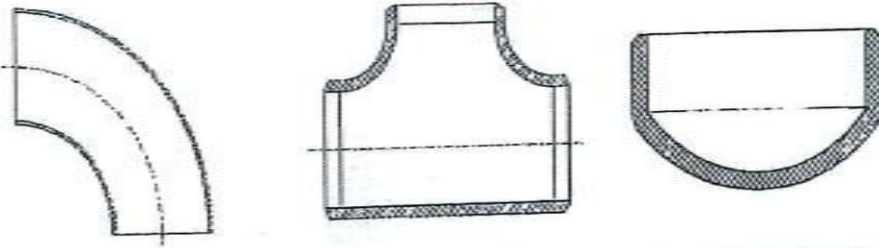
Manufactured to - ASTM A-312

OUTSIDE DIAMETER NB	mm	SCHEDULE 10 WELDED PIPE			
		WALL THICKNESS	WEIGHT	304L	316L
		mm	kg/m		
1/4"	13.70	1.65	0.49	•	•
3/8"	17.50	1.65	0.63	•	•
1/2"	21.34	2.11	1.00	•	•
3/4"	36.67	2.11	1.28	•	•
1"	33.53	2.77	2.09	•	•
1 1/4"	42.16	2.77	2.70	•	•
1 1/2"	48.26	2.77	3.10	•	•
2"	60.45	2.77	3.30	•	•
2 1/2"	73.15	3.05	5.26	•	•
3"	88.90	3.05	6.45	•	•
4"	114.30	3.05	8.35	•	•
5"	141.30	3.40	11.56	•	•
6"	168.15	3.40	13.82	•	•
8"	218.95	3.76	19.93	•	•
10"	273.05	4.19	27.82	•	•
12"	323.85	4.57	35.95	•	•
14"	355.60	4.77	42.20		•
16"	406.40	4.77	48.30		•
18"	457.20	4.77	54.41		•
20"	508.00	5.54	66.80		•

SCHEDULE 40 WELDED PIPE			
WALL THICKNESS	WEIGHT	304L	316L
mm	kg/m		
2.24	0.63	•	•
2.31	0.84	•	•
2.77	1.27	•	•
2.87	1.68	•	•
3.38	2.49	•	•
3.56	3.38	•	•
3.68	4.04	•	•
3.91	5.44	•	•
5.16	8.62	•	•
5.49	11.27	•	•
6.02	16.05	•	•
6.55	21.75	•	•
7.11	28.22	•	•
8.18	43.2	•	•
9.27	61.05		•
10.3	74.81		•
11.1	94		•
12.7	123		•
14.2	155.8		•
15.06	183		•

OUTSIDE DIAMETER NB	mm	SCHEDULE 10 WELDED PIPE			
		WALL THICKNESS	WEIGHT	304L	316L
		mm	kg/m		
1/4"	13.70				
3/8"	17.50				
1/2"	21.34	3.73	1.64		•
3/4"	36.67	3.91	2.22		•
1"	33.53	4.55	3.28		•
1 1/4"	42.16	4.85	4.52		•
1 1/2"	48.26	5.08	5.48		•
2"	60.45	5.54	7.48		•
2 1/2"	73.15	7.01	11.41		•
3"	88.90	7.62	15.47		•
4"	114.30	8.56	22.6		•
5"	141.30	10.97	42.6		•
6"	168.15				
8"	218.95				
10"	273.05				
12"	323.85				
14"	355.60				
16"	406.40				
18"	457.20				
20"	508.00				

### STAINLESS STEEL BUTT WELD PIPE FITTINGS



SIZE IMPERIAL (Inches)	LR316L ELBOWS				316L TEES		316L ENDCAPS	
	45°		90°		SCH 10	SCH 40	SCH 10	SCH 40
1/2"		•	•	•	•	•		
3/4"		•	•	•	•	•		
1"		•	•	•	•	•	•	•
1 1/4"		•		•	•	•	•	•
1 1/2"		•	•	•	•	•	•	•
2"		•	•	•	•	•	•	•
2 1/2"		•	•	•	•	•	•	•
3"		•	•	•	•	•	•	•
4"	•	•	•	•	•	•	•	•
6"	•	•	•	•	•	•		
8"	•		•		•			
10"	•		•		•			
12"	•		•		•			

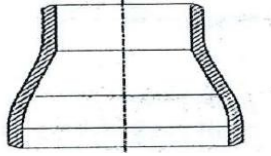
Specification for base material-ASTM A312

Specification for inspection-ASTMA403-91WP-316L-W

Dimension inspection-ASNI B169-93

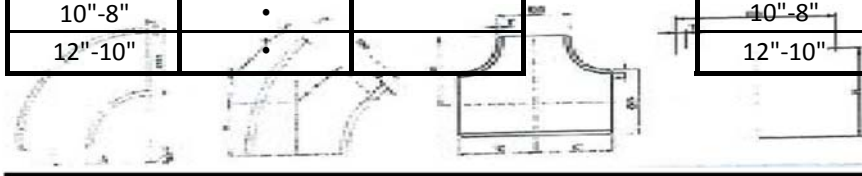


**STAINLESS STEEL BUTT WELD FITTINGS**



SIZE IMPERIAL (Inches)	316L CON REDUCER	
	SCH 10	SCH 40
¾"-½"	•	•
1"-½"	•	•
1"-¾"	•	•
1 ¼"-1"	•	•
1½"-1"	•	•
1½"-1¼"	•	•
2"-1"	•	•
2"-1½"	•	•
2½"-2"	•	•
3"-2"	•	•
3"-2½"	•	•
4"-2"	•	•
4"-3"	•	•
6"-4"	•	•
8"-6"	•	•
10"-8"	•	•
12"-10"	•	•

DIMENSIONS	CON REDUCER
NOMINAL PIPE SIZE	OVERALL LENGTH (E)
¾"-½"	38.10
1"-½"	50.80
1"-¾"	50.80
1 ¼"-1"	50.80
1½"-1"	63.50
1½"-1¼"	63.50
2"-1"	76.20
2"-1½"	76.20
2½"-2"	88.90
3"-2"	88.90
3"-2½"	88.90
4"-2"	101.60
4"-3"	101.60
6"-4"	139.70
8"-6"	152.40
10"-8"	177.80
12"-10"	203.20



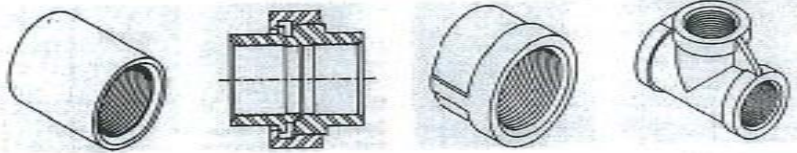
DIMENSIONS	90° L/R ELBOWS	45° L/R ELBOWS	TEES	CAPS
NOMINAL PIPE SIZE	CENTRE TO END (A)	CENTRE TO END (B)	CENTRE TO END (C)	OVERALL LENGTH (D)
½"	38.10	15.75	25.40	25.40
¾"	28.45	11.18	28.45	25.40
1"	38.10	22.35	38.10	38.10
1 ¼"	47.75	25.40	47.75	38.10
1½"	57.15	28.45	57.15	38.10
2"	76.20	35.05	63.50	38.10
2½"	75.25	44.45	76.20	38.10
3"	114.30	50.80	85.85	50.80
4"	152.40	63.50	104.65	63.50
5"	190.50	79.25	123.95	76.20
6"	228.60	95.25	142.75	88.90
8"	304.80	127.00	177.80	101.60
10"	381.00	158.75	215.90	127.00

12"	457.20	190.50	254.00	152.40
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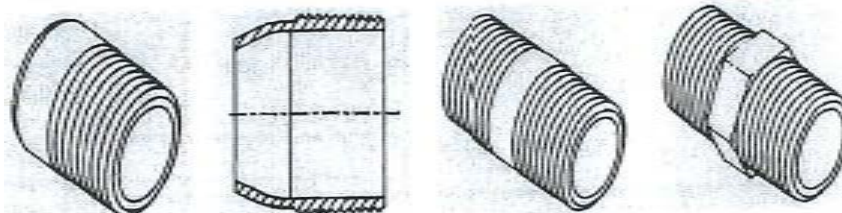
### STAINLESS STEEL BSP FITTINGS T316

Manufactured to ASTM A312 Material ex Pipe

Manufactured to ASTM A351 Material ex Castings



	BSP SOCKETS	BSP MACUNIONS	END CAPS	BSP TEES
1/8"	•	•	•	•
1/4"	•	•	•	•
3/8"	•	•	•	•
1/2"	•	•	•	•
3/4"	•	•	•	•
1"	•	•	•	•
1 1/4"	•	•	•	•
1 1/2"	•	•	•	•
2"	•	•	•	•
2 1/2"	•	•	•	•
3"	•	•	•	•
4"	•	•	•	•

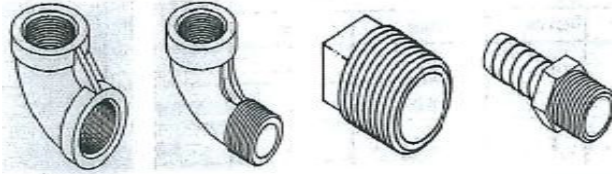


	WELD NIPPLES	REDUCED WELD NIPPLES	BARREL NIPPLES	HEX NIPPLES
1/8"	•		•	•
1/4"	•		•	•
3/8"	•		•	•
1/2"	•	•	•	•
3/4"	•	•	•	•
1"	•	•	•	•
1 1/4"	•	•	•	•
1 1/2"	•	•	•	•
2"	•	•	•	•
2 1/2"	•	•	•	•
3"	•	•	•	•
4"	•	•	•	•

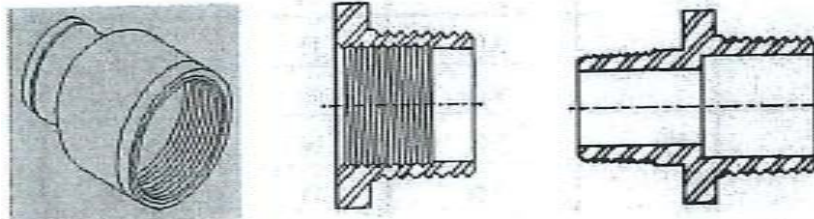
### STEEL GRADES

Manufactured to ASTM A312 Material ex Pipe

Manufactured to ASTM A351 Material ex Castings



	BSP F/F ELBOWS		BSP M/F 90° (STREET) ELBOWS	BSP PLUGS	BSP HOSETAILS	
	45°	90°				
1/8"	•	•	•	•		
1/4"	•	•	•	•	•	1/4" BSP to 1/4" I/D Hose
3/8"	•	•	•	•	•	3/8" BSP to 3/8" I/D Hose
1/2"	•	•	•	•	•	1/2" BSP to 1/2" I/D Hose
3/4"	•	•	•	•	•	3/4" BSP to 3/4" I/D Hose
1"	•	•	•	•	•	1" BSP to 1" I/D Hose
1 1/4"	•	•	•	•	•	1 1/4" BSP to 1 1/4" I/D Hose
1 1/2"	•	•	•	•	•	1 1/2" BSP to 1 1/2" I/D Hose
2"	•	•	•	•	•	2" BSP to 2" I/D Hose
2 1/2"		•		•	•	
3"		•		•	•	
4"				•	•	



	BSP REDUCING SOCKETS	BSP REDUCING BUSHES	BSP REDUCING HEX NIPPLES
3/8"-1/4"	•	•	•
1/2"-1/4"	•	•	•
1/2"-3/8"	•	•	•
3/4"-1/2"	•	•	•
1"-1/2"	•	•	•
1"-3/4"	•	•	•
1 1/4"-1"	•	•	
1 1/2"-1"	•	•	
1 1/2"-1 1/4"	•	•	
2"-1"	•	•	
2"-1 1/2"	•	•	•
3"-2"		•	•

**BALL VALVES - BSP**

**V3 Type 1/4" to 4"**

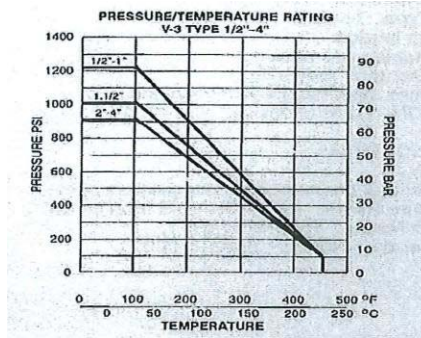
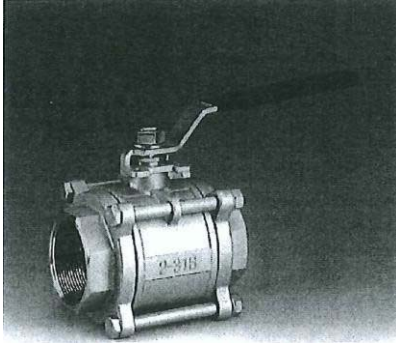
**3-Piece Stainless Steel AISI 316 (DIN 1.4408)**

Full Port, Lug Body, 1000WOG, Blow-out proofsystem.

Pipe Threads in accordance with ANSI B2.1, BS21 1973 or DIN 259.

W/15%Glassfibre reinforced teflon seat and seals.

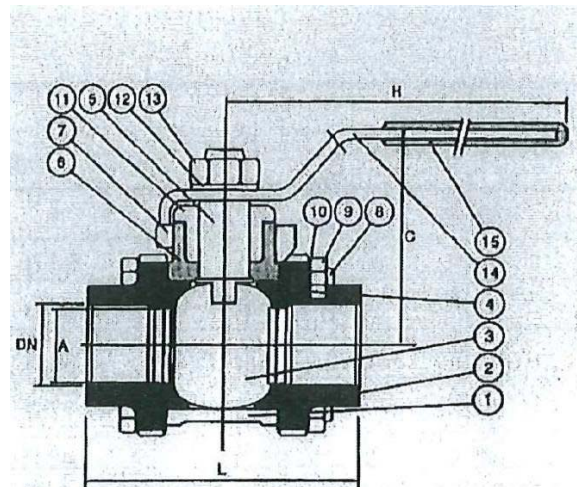
BSP Threaded Ends



ØDN	A	L	C	H	CV FACTOR	TORQUE INCH/LBS	KG
1/4"	11.6	65	42	98	6	36	0.41
3/8"	12.7	65	42	98	7	36	0.40
1/2"	15	66	49	115	10	43	0.65
3/4"	20	83	52	115	25	65	0.80
1"	25.4	95	62	143	35	101	1.20
1 1/4"	32	111	66	143	46	158	2.05
1 1/2"	38	130	77	178	80	187	2.80
2"	50.8	151	85	178	110	230	4.35
2 1/2"	65	185	139	250	310	430	8.40
3"	80	212	150	250	360	2.200	14.50
4"	100	270	173	280	820	3.400	26.50

Ø Thread: DIN 259, BSP

NR	PART	QTY	V3-316
1	Body	1	A351 CF8M
2	Cap	2	A351-CF8M
3	Ball	1	316
4	Seat	2	15% R-PTFE
5	Steam	1	316
6	Thrust Washer	1	15% R-PTFE
7	Stem Packing	2	15% R-PTFE
8	Bolt	4	304
9	Hex Nut	4	304
10	Bolt Washer	4	304
11	Gland Nut	1	304
12	Stem Washer	1	304
13	Stem Nut	1	304
14	Handle	1	304
15	Plastic Cover	1	Plastic



## STEEL GRADES

### Other Material Data

The table below shows typical temperatures and temperature ranges of interest in connection with fabrication and application.

#### Quench annealing

Refers to recommended material temperature. Cooling shall be carried out rapidly in air or water to avoid undesirable precipitations. Steel used for pressure vessel fabrication does not normally require heat treatment after welding or cold forming less than 15% for austenitic and 10% for duplex grades. When quench annealing is necessary, the temperatures shown in the table are recommended.

#### Pressure vessel application

Refers to temperature ranges within which the steel can normally be used, provided that no corrosion problems are encountered. Specific pressure vessel standards may prescribe values for general approval.

**Table 6: Other material data**

STEEL GRADE		SCALING TEMPERATURE IN AIR C°	HOT FORMING C°	QUENCH ANNEALING COOLING IN AIR (A) OR WATER (W) C°	PRESSURE VESSEL APPLICATION C°
EN	ASTM				
1.4301	304	850	1150-900	1050 A/W	(-270) - 800
1.4307	304L	850	1150-900	1050 A/W	(-270) - 800
1.4311	304LN	850	1150-900	1050 A/W	(-270) - 800
1.4541	321	850	1150-900	1050 A/W	(-270) - 800
1.4401	316	850	1150-900	1070 A/W	(-160) - 750
1.4404	316LN	850	1150-900	1070 A/W	(-160) - 750
1.4406	316LN	850	1150-900	1070 A/W	(-270) - 750
1.4571	316Ti	850	1150-900	1070 A/W	(-160) - 750
1.4436	316	850	1150-900	1070 A/W	(-160) - 750
1.4432	316LN	850	1150-900	1070 A/W	(-160) - 750
1.4418	317L	850	1150-900	1100 A/W	(-60) - 500
1.4439	-	850	1150-900	1100 W	(-60) - 550
1.4539	904L	1000	1200-950	1120 W	(-60) - 400
1.4547	S31254	1000	1200-1000	1170 W	(-60) - 400
1.4652	S32654	1000	1200-1100	1170 W	(-60) - 400
1.4162	S32101	850	1100-900	1050 A/W	(-40) - 280
1.4362	S32304	1100	1100-950	1000 A/W	(-40) - 280
1.4462	S32205	1000	1150-950	1050 A/W	(-10) - 280
1.4410	S32750	1000	1120-1020	1070 A/W	(-10) - 280
1.4845	310S	1150	1150-900	1070 W	(-60) - 1000
1.4818	S30415	1050	1150-900	1070 A/W	600 - 850
1.4835	S30815	1150	1150-900	1070 A/W	800 - 1000
1.4854	S35315	1170	1150-900	1070 A/W	-

**TABLE 4: Stength (elevated temperatures)**

STEEL GRADE		PROOF STRESS AT ELEVATED TEMPERATURES					
EN	ASTM	R 0.2M MIN N/mm <sup>2</sup>					
		50°C	100°C	200°C	300°C	400°C	500°C
1.4301	304	186	163	137	123	114	105
1.4307	304L	168	148	124	111	103	94
1.4311	304LN	228	198	160	138	125	117
1.4541	321	191	173	150	137	129	124
1.4401	316	196	175	148	133	124	117
1.4404	316L	187	164	137	123	114	105
1.4406	316LN	250	211	175	155	140	130
1.4571	316Ti	197	180	159	145	136	129
1.4436	316	196	175	148	133	124	117
1.4432	316L	187	164	137	123	114	105
1.4438	317L	196	172	144	129	119	110
1.4439	-	260	225	185	165	150	140
1.4539	904L	190	176	155	136	125	120
1.4547	S31254	270	235	195	175	160	150
1.4652	S32654	385	350	315	300	295	280
1.4162	S32101	430	380	330	300	-	-
1.4362	S32304	370	330	290	260	-	-
1.4462	S32205	415	360	310	280	-	-
1.441	S32750	-	470	420	380	-	-
1.4845	310S	186	163	137	123	114	105
1.4818	S30415	245	200	165	150	140	130
1.4835	S30815	280	230	185	170	160	150

## STEEL GRADES

The tables for tensile strength at room temperature (Table 3) and strength at elevated temperatures (Table 4) give minimum values in accordance with Swedish and British standard. In cases where such a standard is lacking, values are based on Outokumpu's own test data.

The tensile properties pertain to transverse specimens and maximum plate thickness 30mm.




Design values stipulated in national standards apply to pressure vessel plate. The design values are based on the material's proof stress and/or tensile strength.

The strength properties of standard austenitic grades can be approved-

- by nitrogen addition; indicated by an N in the designation for standard grades
- by cold deformation (i.e. Cold stretching or rolling).

Table 3: Mechanical properties (room temperature)

EN	STEEL GRADE ASTM	TENSILE PROPERTIES-20°C				TYPICAL VALUES					
		$R_p 0.2$	$R_p 1.0$	$R_m$	$A_5$	HOT ROLLED PLATE THICKNESS 10-30MM			COLD ROLLED SHEET THICKNESS 2.5-5MM		
		N/mm <sup>2</sup> MIN	N/mm <sup>2</sup> MIN	N/mm <sup>2</sup> MIN	% MIN	$R_p 0.2$	$R_m$	HB	$R_p 0.2$	$R_m$	HB
1.4307	304L	190	220	480	45	280	590	170	310	600	170
1.4301	304	210	240	510	45	290	610	170	310	620	170
1.4311	304LN	270	300	550	40	340	660	190	360	670	190
1.4541	321	210	240	510	40	250	580	170	300	600	170
1.4401	316	220	250	510	45	280	590	160	320	620	170
1.4404	316L	210	240	490	45	290	600	170	330	620	170
1.4406	316LN	290	325	600	40	320	620	180	360	680	190
1.4571	316Ti	220	250	510	40	260	570	160	320	600	170
1.4436	316	220	50	510	45	300	610	170	340	640	170
1.4432	316L	210	240	490	45	280	580	160	320	600	160
1.4438	317L	220	250	490	40	290	600	170	320	610	160
1.4439	-	290	325	600	40	310	640	180	370	680	180
1.4539	904L	220	250	500	35	270	600	160	310	610	160
1.4547	S31254	300	340	650	35	340	700	180	360	720	180
1.4652	S32654	430	470	750	40	470	840	215	520	890	235
1.4162	S32101	450	-	650	30	480	700	230	600	840	230
1.4362	S32304	400	-	640	25	450	690	210	520	720	230
1.4462	S32205	480	-	680	25	510	760	240	290	810	260
1.4410	S32750	540	-	780	25	590	830	-	650	870	-
1.4845	310S	210	240	500	30	280	610	160	300	610	160
1.4818	S30415	290	325	600	40	330	650	190	360	660	200
1.4835	S30815	310	345	650	40	370	700	190	390	710	200
1.4854	S35315	270	310	650	40	300	670	-	350	710	-

	Austenitic		Duplex		Heat Resisting
$R_p$	=	Proof (Yield) Stress		1 N/mm <sup>2</sup>	= 1 MPa
$R_m$	=	Tensile Strength			= 10 BAR
$A_5$	=	Elongation			= 145.04 psi



## STEEL GRADES

### Physical Properties

The table below gives typical values at room temperature.

### Corrosion resistance

The corrosion resistance in different media is given in corrosion tables and isocorrosion charts (e.g. Avesta Corrosion Handbook for Stainless Steels, 1994).

**Table 5: Physical properties (room temperature)**

STEEL GRADE		MODULUS DENSITY g/cm <sup>3</sup>	EXPANSION OF ELASTICITY kN.mm <sup>2</sup>	LINEAR THERMAL 20-100°C x 10 <sup>-6</sup> /°C	HEAT CONDUCTIVITY W/m°C	ELECTRICAL CAPACITY J/Kg°C	RESISTIVITY nΩm
EN	ASTM						
1.4301	304	7.9	200	17	15	500	700
1.4307	304L	7.9	200	17	15	500	700
1.4311	304LN	7.9	200	17	15	500	700
1.4541	321	7.9	200	17	15	500	700
1.4401	316	8.0	200	16.5	13.5	500	750
1.4404	316L	8.0	200	16.5	13.5	500	750
1.4406	316LN	8.0	200	16.5	13.5	500	750
1.4571	316Ti	8.0	200	16.5	13.5	500	750
1.4436	316	8.0	200	16.5	13.5	500	750
1.4432	316L	8.0	200	16.5	13.5	500	750
1.4438	317L	8.0	200	16	13.5	500	750
1.4439	-	8.0	200	16	13.5	500	850
1.4539	904L	8.0	200	15	13	500	850
1.4547	S31254	8.0	200	15	13	500	850
1.4652	S32654	8.0	200	15	9	500	850
1.4162	S32101	7.8	200	13	15	500	750
1.4362	S32304	7.8	200	13	15	500	850
1.4462	S32205	7.8	200	13	15	500	850
1.4410	S32750	7.8	200	13	15	500	850
1.4845	310S	7.8	200	15.5	12	500	800
1.4818	S30415	7.8	200	16.5	15	500	850
1.4835	S30815	7.8	200	17	15	500	850
1.4854	S35315	8.0	200	15	12	450	1000

 Austenitic

 Duplex

 Heat Resisting

## STEEL GRADES

Table 1: Chemical Composition - product range

Steel Grade			Chemical Composition, average %						Outokumpu products
EN	ASTM	OTK NAME	C	N	Cr	Ni	Mo	Others	
1.4016	430	4016	0.04	-	16.5	-	-	-	CNBR
1.4510	S43035	4510	0.04	-	18	-	-	Ti	CR
1.4021	420	4021	0.20	-	13	-	-	-	HNBR
1.4028	420	4028	0.30	-	12.5	-	-	-	NR
1.4418	-	248 SV	0.03	0.04	16	5	1	-	PBR
1.4162	S32101	LDX 2101	0.04	0.20	21	1.35	0.1	4Mn	On Request
1.4362	S32304	SAF 2304®	0.02	0.10	23	4.8	0.3	-	PHC
1.4462	S32205	2205	0.02	0.17	22	5.7	3.1	-	PHCBR
1.4501	S32760	4501	0.03	0.20	24	6	3	0.2W	P
1.4410	S32750	SAF 2507®	0.02	0.27	25	7	4	-	PC
1.4310	301				17	7	-	-	HCNBR
1.4318	301LN				17	7	-	-	HCNBR
1.4382	201				17	5	-	6.5Mn	HCNR
1.4301	304				18.1	8.3	-	-	PHCNBR
1.4307	304L				18.1	8.3	-	-	PHCNBR
1.4311	304LN				18.5	10.5	-	-	PHCNBR
1.4541	321				17.3	9.1	-	Ti	PHNNBR
1.4305	303				17.3	8.2	-	S	BR
1.4306	304L				18.2	10.1	-	-	PHCNBR
1.4303	305				17.7	11.2	-	-	HCNBR
1.4568	S30430				17.7	9.7	-	3.3Cu	BR
1.4401	316				17.2	10.2	2.1	-	PHCNBR
1.4404	306L				17.2	10.1	2.1	-	PHCNBR
1.4406	306LN				17.2	10.3	2.1	-	PHCNBR
1.4571	316Ti				16.8	10.9	2.1	Ti	PHCNBR
1.4436	316				16.9	10.7	2.6	-	PHCNBR
1.4432	316L				16.9	10.7	2.6	-	PHCNBR
1.4435	316L				17.3	12.6	2.6	-	PHCNBR
1.4429	S31653				17.3	12.5	2.6	-	P
1.4438	317L				18.2	13.7	3.1	-	PHCNR
1.4439	317MN				17.8	12.7	4.1	-	PHC
1.4539	904L				20	25	4.3	1.5Cu	PHYCNBR
1.4547	S31254				20	18	6.1	Cu	PHCBNBR
1.4652	S32654				24	22	7.3	3.5Mn,Cu	On Request
1.4948	304H				18.1	8.3	-	-	PHCBR
1.4878	321H				17.3	9.1	-	Ti	PHCNBR
1.4818	S30415				18.5	9.5	-	1.3Si,Ce	PCNBR
1.4833	309S				22.3	12.6	-	-	PHCNBR
1.4828	-				20	12	-	2Si	CNBR
1.4835	S30815				21	11	-	1.6Si,Ce	PHCNBR
1.4845	310S				25	20	-	-	PHCNBR
1.4854	S35315				25	35	-	1.3Si,Ce	PC

Austenitic  
Duplex

Ferritic  
Heat Resisting

Martensitic



**Outokumpu Products:**

**C** = Cold rolled strip/sheet

**P** = Hot rolled plate (Quarto)

**N** = Cold rolled narrow strip

**H** = Hot rolled strip/sheet (CPP)

**B** = Bar

## STEEL GRADES

### Product Standards

As a rule production is carried out in accordance with common national product standards and the steel designations used in these standards. Production to other standards and specifications is carried out by special agreement.

**Table 2: Steel designations**

En	Steel Grade	OTK steel name	National steel designation superseded by EN			
	ASTM		BS	DIN	SS	NF
1.4162	S32101	LDX 2101	-	-	-	-
1.4362	S32304	SAF 2304	-	1.4362	2327	Z3 CN 23-04 Az
1.4462	S32205	2205	318S13	1.4462	2377	Z3 CND 25-05 Az
1.4410	S32750	SAF 2507	-	-	2328	Z3 CND 25-06 Az
1.4310	301	4310	301S21	1.4310	2331	Z11 CN 18-08
1.4372	201	4372	-	-	-	Z12 CMN 17-07 Az
1.4301	304	4301	304S31	1.4301	2333	Z7 CN 18-09
1.4307	304L	4307	304S11	-	2352	Z3 CN 18-10
1.4311	304LN	4311	304S61	1.4311	2371	Z3 CN 18-10 Az
1.4541	321	4541	321S31	1.4541	2337	Z6 CNT 18-10
1.4306	304L	4306	304S11	1.4306	2352	Z3 CN 18-10
1.4303	305	4303	305S19	1.4303	-	Z1 CN 18-12
1.4401	316	4401	316S31	1.4401	2347	Z7 CND 17-11-02
1.4404	316L	4404	316S11	1.4404	2348	Z3 CND 17-11-02
1.4406	316LN	4406	316S61	1.4406	-	Z3 CND 17-11 Az
1.4571	316Ti	4571	320S31	1.4571	2350	Z6 CNDT 17-12
1.4436	316	4436	316S33	1.4436	2343	Z7 CND 18-12-03
1.4432	316L	4432	316S13	-	2353	Z3 CND 17-12-03
1.4435	316L	4435	316S13	1.4435	2353	Z3 CND 18-14-03
1.4429	S31653	4429	316S63	1.4429	2375	Z3 CND 17-12 Az
1.4438	317L	4438	317S12	1.4438	2367	Z3 CND 19-15-04
1.4439	317LMN	4439	-	1.4439	-	Z3 CND 18-14-05 Az
1.4539	904L	904L	904S13	1.4539	2562	Z2 NCDU 25-20
1.4547	S31254	254 SMO	-	-	2387	-
1.4948	304H	4948	304S51	14948	2333	Z6 CN 18-09
1.4818	S30415	153 MA	-	-	2372	-
1.4828	-	4828	-	1.4828	-	Z17 CNS 20-12
1.4835	S30815	253 MA	-	-	2368	-
1.4854	S35315	353 MA	-	-	-	-