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Types of Stainless Steel

Stainless Steel is a name given to a group of steel alloys that contain more than 12% Chromium. Chromium has a high affinity for oxygen and forms a stable oxide film on the surface of the stainless steel. This film is called the passive oxide layer and forms instantaneously in ordinary atmospheres. The film is self healing and rebuilds when it has been removed. It is this film that gives Stainless Steel its corrosion resistance. The large group of stainless steels can be divided into two groups - Austenitic and Ferritic, the Ferritic group being split again into two groups, Martensitic and Ferritic.

Austenitic Grades

This group of stainless steels contains 17 - 25% Chromium and 8 - 20% Nickel with various additional elements to achieve the desired properties. In the fully annealed condition Austenitic stainless steels exhibit a useful range of mechanical and physical properties (shown on the accompanying table). Mechanical properties can be increased with cold working. Welding of this group must be carried out with correct methods but the low Carbon content results in fewer problems than with the Ferritic and Martensitic grades. Normally these stainless steels are non-magnetic but will become slightly magnetic when cold worked. Basic grades of Austenitic stainless steels are listed below...

Description and General Uses

T303	Specially developed for machining purposes where production involves extensive machining in automatic screw machines. Sulphur or Selenium is added to give excellent free machining and nonseizing properties. Due to the addition of Sulphur or Selenium the corrosion resistance is lowered to slightly below that of T304. T303 is Non hardenable and not recommended for welding. Non-magnetic when annealed but becomes slightly magnetic when cold worked.
T304	The most versatile and widely used stainless steel with the best all round performance. It's Carbon content is lower and its corrosion resistance somewhat higher than T302. It is less susceptible to intergranular corrosion after welding. Non-magnetic but become slightly magnetic when cold worked.
T304L	Type 304L is a very low Carbon stainless steel with general corrosion resistance similar to T304 but with superior resistance to intergranular corrosion following welding or stress relieving. It is recommended for use in parts which are fabricated by welding and which cannot be subsequently annealed. Parts made from this type are generally limited to service at temperatures up to 426°C. The physical properties and thermal treatments of T304L are similar but not necessarily identical to those of T304. Non-magnetic when annealed but becomes slightly magnetic when cold worked.
T316	Known as the marine alloy - T316 has a 2-3% addition of Molybdenum which improves the corrosion resistance. T316 has superior corrosion resistance to other Austenitic steels when exposed to many types of chemical corrodents as well as marine atmospheres - T316 also has applications in the chemical, textile, and paper industries. It has better strength and creep resistance at high temperatures than T304 and greater work hardening properties. Non-magnetic but becomes slightly magnetic when cold worked.
T316L	T316L is a very low Carbon stainless steel with general corrosion resistance similar to T316 but with superior resistance to intergranular corrosion following welding or stress relieving. It is recommended for use in parts which cannot be subsequently annealed. Parts made from this type are generally limited to service temperatures up to 426°C. The physical properties and thermal treatments of Type 316L are similar but not necessarily identical to those of T316. Non-magnetic when annealed but becomes slightly magnetic when cold worked

Ferritic Grades

This group contains a minimum of 17% Chromium and 0.08 - 2.00% Carbon. The increase in chromium imparts increased resistance to corrosion at elevated temperatures, however the lack of mechanical properties due to the fact that it cannot be heat treated, limits its applications. Like martensitics they are magnetic and the welding of the group should be carried out with care.

Description and General Uses

445	NSS445M2 is a ferritic stainless steel having superior antirust and weld anticorrosion characteristics which has been developed as a material suited for roofing and facing applications and for applications where high resistance to hot water containing chloride is required. The main constituent of this steel is 22Cr-1.2Mo. By adding Nb, Ti and Al, the surface film of this steel is reinforced to improve its rust resistance. Further, the loss of Cr through oxidation at the time of welding is suppressed to prevent the weld from degrading in corrosion resistance. In addition to these features, its thermal expansion coefficient is nearly equal to that of common steel and smaller than that of austenitic stainless steel, so that this steel is also suitable for long-size roofing applications
430	T430 is a corrosion and heat resisting stainless steel with superior corrosion and heat resistance compared with T410. T430 is non hardenable and possesses only mild cold working properties due to high chromium content. It's weldability is excellent and it does not require subsequent annealing. Magnetic in all conditions
404GP	404GP is a general purpose stainless steel able to substitute for the workhorse grade, 304, in most applications. 404GP is easier to cut, fold, bend and weld than 304. This gives a better-looking job – cleaner edges and bends, flatter panels, neater construction. Plus cost advantages from lower tool maintenance and longer life. And with a lower density than 304, it gives 3.5% more area per kg. Grade 404GP can be used instead of grade 304 stainless steel in most applications. The corrosion resistance of grade 404GP is at least as good as grade 304, often better: it is not affected by stress corrosion cracking in hot water, and is not subject to sensitisation when welded.

To find the approximate weight for sheet and plate

Piece weight (kg) = Length (m) x width (m) x thickness (mm) x 8

Note: Formula should not be used for design purposes.

STAINLESS STEEL SHEET, PLATE AND COIL FINISHES

Common finishes held in stock are No.1, 2B, BA and No.4. Other finishes can be sourced from overseas suppliers.

Unpolished Finishes

- No.1** Hot Rolled, annealed and pickled. Generally used where smoothness of finish is not of particular importance.
- 2D** A dull cold rolled finish obtained from a final annealing and pickling, or a final light cold roll pass on dull rollers, after sheet has been cold rolled annealed and pickled. This finish is generally used in forming deep drawn articles which may be polished after fabrication.
- 2B** A semi-bright satin finish obtained from temper rolling after the sheet has been cold rolled, annealed and pickled. This is a general purpose finish that polishes better than 2D and is commonly used except in exceptionally difficult deep drawing applications.
- BA** A slightly reflective surface obtained from bright annealing after cold rolling used for quality deep drawing such as sinks, tubs etc.

Polished Finishes

Sheets can be produced with 1 or 2 sides polished. When polished on only one side, the other side may be rough ground in order to obtain the necessary flatness.

- No.3** A polished finish obtained by mechanical polished on 2D or 2B finish with approx. 100 grit abrasive.
- No.4** A 'Brush' finish obtained from mechanical polishing with 120 - 150 grit. A general purpose finish widely used for kitchen and dairy equipment.
- No.6** A dull satin finish which has lower reflectivity than No.4 finish. It is used for architectural applications where high lustre is undesirable; it is also used effectively to contrast with brighter finishes.
- No.7** Buff polished to a high reflection ratio. Chiefly used for architectural and ornamental purposes.
- No.8** Mirror finished for high reflection. This finish is most widely used for press plates as well as small mirrors and reflectors.
- HL** Hairline finish obtained by mechanical polishing with 120-320 grit. Used mostly for finishing on flat bar for architectural purposes.

Coil
Cold rolled to ASTM A240/480



Width mm	304 2B	404 GP	445 M2
914	0.90mm - 3.00 mm		
1219	0.55mm - 3.00mm	0.55mm - 3.00mm	0.55mm - 3.00mm

Sheet - Austenetic

Cold rolled to ASTM A240/480



Grade	T304				T316
Finish		2B	BA	No.4	2B
Coating	Weight kg/sheet	Plain or PVC	PVC	PVC	Plain or PVC
Size in mm					
0.45 x 914 x 2438	8.02	0002771			
0.45 x 1219 x 2438	10.70	0002773			
0.55 x 914 x 2438	9.80	0002767			
0.55 x 1219 x 2438	13.08	0002769	0014532		0013801
0.70 x 914 x 2438	12.48	0002765			
0.70 x 1219 x 2438	16.64	0014533	0002885	0002867	
0.90 x 914 x 2438	16.04	0002759		0002864	
0.90 x 1219 x 2438	24.40	0013227	0002816	0002865	0013800
0.90 x 1524 x 3048	33.15	0017707		0017708	
1.20 x 914 x 2438	21.39	0013797		0002845	
1.20 x 914 x 3048	26.74	0015379		0013018	
1.20 x 914 x 3658	31.82			0013472	
1.20 x 1219 x 2438	28.53	0014025	0002803	0002847	0017463
1.20 x 1219 x 3048	35.67	0013798		0015475	
1.20 x 1524 x 3048	44.59	0002756		0017709	
1.50 x 914 x 3048	33.47	0002779		0002833	
1.50 x 914 x 2438	26.44	0002777		0002826	
1.50 x 914 x 3658	40.12	0002782			
1.50 x 1219 x 2438	35.66	0002737	0002776	0002832	0017464
1.50 x 1219 x 3658	53.51	0002744			
1.50 x 1524 x 3048	55.74	0013796			
2.00 x 1219 x 2438	47.55	0014027		0002824	0013816
2.00 x 1500 x 3000	72.00			0017710	
2.00 x 1524 x 3048	74.32	0013813			
2.50 x 1219 x 2438	59.44	0014534			
2.50 x 1500 x 3000	90.00			0017711	
3.00 x 1219 x 2438	71.33	0002717		0017712	0017465
3.00 x 1524 x 3048	111.48	0002720			

Sheet - Ferritic



Size (mm)	Weight kg/m	404GP		445M2	
		2B	No.4	2B	2DRSS
0.55 X 1219 X 2438	13.08	0014944			0014324
0.70 X 1219 X 2438	16.64		0014691	0014480	
0.90 X 1219 X 2438	24.40	0014687		0014481	
1.20 X 1219 X 2438	28.53	0014688	0014693	0014482	
1.60 X 1219 X 2438	35.66	0014949	0014952	0014483	
2.00 X 1219 X 2438	47.55	0014950	0015463		
2.50 X 1219 X 2438	59.44			0015033	
3.00 X 1219 X 2438	71.33			0015034	

* please contact your Wakefield Representative for techinal information on 404GP and 445M2

404GP can be used instead of grade 304 stainless steel in most applications. The corrosion resistance of grade 404GP is at least as good as grade 304, often better: it is not affected by stress corrosion cracking in hot water, and is not subject to sensitisation when welded.

445M2 is a ferritic stainless steel with excellent resistance to corrosion in the atmosphere and in waters. The steel is a development of grade 444, with extremely low carbon and addition of nitrogen, molybdenum and niobium for improved corrosion resistance and weldability.

Plate

ASTM A240/480



Grade	T304L			T316L
Finish	Weight kg/sheet	No.1	2B	No.1
Coating		Plain or PVC		
Size in mm				
4 x 1500 x 3000	144.00		0002696	
5 x 1500 x 3000	180.00	0002691	0002693	
6 x 1500 x 3000	216.00	0002688	0002689	0002708
8 x 1500 x 3000	288.00	0002686		
10 x 1500 x 3000	360.00			0002706
10 x 2000 x 6000	960.00	0002685		
12 x 1500 x 3000	432.00	0002682		0002705
16 x 1500 x 3000	576.00	0002681		0002704
20 x 1500 x 3000	720.00	0002680		0002703
25 x 1500 x 3000	900.00	0002679		0002702

Flat Bar

A276/A484



Diameter mm	Theoretical kg/m	T304	T316
10 x 3	0.242	0003127	
20 x 3	0.471	0003131	
20 x 5	0.785	0003132	
25 x 3	0.589	0003137	
25 x 5	0.981	0003139	
25 x 6	1.180	0003140	
30 x 5	1.120	0003146	
30 x 6	1.450	0003148	
40 x 3	0.942	0003150	
40 x 5	1.570	0003152	0003185
40 x 6	1.880	0003154	
40 x 9	2.900	0003156	
40 x 12	3.770	0003155	
50 x 3	1.180	0003157	
50 x 5	1.960	0003160	
50 x 6	2.360	0003161	0003192
50 x 9	3.570	0003163	0003193
65 x 6	3.130	0003166	
65 x 9	4.630	0003167	
75 x 6	3.570	0003170	
75 x 9	5.340	0003171	
100 x 6	4.710	0003173	
100 x 9	7.140	0003175	

Finish Under normal circumstances sizes 50 x 6 and below are slit rolled edge. Size 65 x 6 and above are hot rolled, annealed and pickled. Some variation in finishes may occur, please contact Wakefield Metals for details.

Length 4m

Round Bar

Imperial A582 (T303), A276 (T304 & T316)



Diameter		Theoretical kg/m	T303	T304 I.M	T316	Tolerance
mm	inch					
3.18	1/8	0.062		0003020	0003065	H9
4.76	3/16	0.140		0003022		H9
6.35	1/4	0.248	0002995	0003026	0003067	H9
7.94	5/16	0.388	0002996	0003028	0003068	H9
9.53	3/8	0.559		0003029	0003070	H9
11.11	7/16	0.761	0002999			H9
12.70	1/2	0.994	0003000	0003034	0003075	H9
14.29	9/16	1.258	0003001		0018290	H9
15.88	5/8	1.553	0003002	0003039	0003076	H9
19.05	3/4	2.237	0003003	0003042	0003078	H9
22.23	7/8	3.045			0003080	H11
25.40	1	3.977	0003005	0003048	0003083	H11
28.58	1-1/8	5.034			0003084	H11
31.80	1-1/4	6.215	0003007	0003051	0003085	H11
34.93	1-3/8	7.520		0003052	0003087	H11
38.10	1-1/2	8.949	0003009	0003054	0003088	H11
41.28	1-5/8	10.503			0018293	H11
44.45	1-3/4	12.182		0003056	0003090	H11
50.80	2	15.911	0003011	0003057	0003092	H11
57.15	2-1/4	20.137			0003094	H11
60.33	2-3/8	22.436				H11
63.50	2-1/2	24.860		0003061	0003096	H11
76.20	3	35.799	0003015	0003062	0003097	H11
88.90	3-1/2	48.726			0003099	H11
101.6	4	63.642	0003017			H11

Table 1: Diameter Tolerance of Round Bar

Class	H9	H11
Diameter In mm	9mm	11mm
3 and under	+0, -0.025	+0, -0.060
3 to 6, incl.	+0, -0.030	+0, -0.075
Over 6 to 10, incl.	+0, -0.036	+0, -0.090
Over 10 to 18, incl.	+0, -0.043	+0, -0.110
Over 18 to 30, incl.	+0, -0.052	+0, -0.130
Over 30 to 50, incl.	+0, -0.062	+0, -0.160
Over 50 to 80, incl.	+0, -0.074	+0, -0.190
Over 80 to 120, incl.	+0, -0.087	+0, -0.220

For AISI, ASTM and other tolerances, contact your Wakefield Metals team

Round Bar

Metric A582 (T303), A276 (T304 & T316)



Diameter mm	Theoretical kg/m	T303	T304	T316	Tolerance
4.00	0.099		0003019		H9
5.00	0.154		0003024		H9
6.00	0.222	0002994			H9
10.00	0.617		0003030		H9
12.00	0.888		0003033	0003073	H9
16.00	1.580		0003041		H9
17.00	1.780			0018291	H9
18.00	1.996			0018292	H9
20.00	2.470		0003044		H9
60.00	22.200		0018289		H11

Finish

Length

Up to 31.8mm incl.; Cold drawn annealed and polished over 31.8mm; Hot rolled, solution treated, smooth turned
From 3.6m to 5m - Ask your Wakefield Metals team for details

Table 1: Diameter Tolerance of Round Bar

Class	H9	H11
Diameter In mm	9mm	11mm
3 and under	+0, -0.025	+0, -0.060
3 to 6, incl.	+0, -0.030	+0, -0.075
Over 6 to 10, incl.	+0, -0.036	+0, -0.090
Over 10 to 18, incl.	+0, -0.043	+0, -0.110
Over 18 to 30, incl.	+0, -0.052	+0, -0.130
Over 30 to 50, incl.	+0, -0.062	+0, -0.160
Over 50 to 80, incl.	+0, -0.074	+0, -0.190
Over 80 to 120, incl.	+0, -0.087	+0, -0.220

For AISI, ASTM and other tolerances, contact your Wakefield Metals team

Angle - Equal Legs

A276/A484



Diameter mm	Theoretical kg/m	T304	T316
25 x 25 x 3	1.15	0003201	
25 x 25 x 5	1.81	0003202	
30 x 30 x 3	1.39	0003203	
40 x 40 x 3	1.88	0003206	
40 x 40 x 5	3.03	0003207	0003217
40 x 40 x 6	3.03		0019130
50 x 50 x 3	2.41	0003209	
50 x 50 x 5	3.87	0003210	
50 x 50 x 6	4.55	0003211	0003219
65 x 65 x 6	6.07	0003212	
75 x 75 x 6	7.03	0003213	
75 x 75 x 9	10.20	0003214	

Finish Hot rolled, annealed and pickled
Length 6m

Woven Wire Mesh

304

No. of Strands per 25.4mm of wire(both ways)	Wire Diameter mm	Hole Size mm	Approx % of open space	Microns	T304
2 x 2	1.630	11.070	76	8,000	0004178
4 x 4	1.120	5.230	68	4,000	0004182
6 x 6	0.810	3.430	66	2,800	0004185
8 x 8	0.640	2.570	65	2,000	0004187
10 x 10	0.580	1.950	59	1,680	0004190
16 x 16	0.460	1.130	51	1,000	0004193
18 x 18	0.410	0.996	50	850	0004194
20 x 20	0.380	0.894	50	840	0004196
30 x 30	0.310	0.531	39	500	0004197
40 x 40	0.224	0.410	42	420	0004199
50 x 50	0.193	0.315	38	300	0004200
60 x 60	0.183	0.231	32	250	0004201
80 x 80	0.142	0.175	30	210	0004202

Finish Annealed
Length 30m Rolls. Cut to length across width only
Microns British test sieve apertures
Width 1 Meter

Wire - Hard & Soft Temper



Diameter		Weight		T304 Temper	
mm	SWG	kg/m	m/kg	Soft	Hard
4.811	6	0.148	6.76	0004208	
4.064	8	0.103	9.71		0004217
3.251	10	0.066	15.15	0004210	0004218
2.642	12	0.043	23.26	0004211	0004219
2.032	14	0.026	38.46	0004212	0004220
1.626	16	0.016	62.50	0004213	0004221
1.219	18	0.009	111.11	0004214	0004222
0.914	20	0.005	200.00	0004215	0004223
0.711	22	0.003	333.33	0004216	

Finish Drawn, bright
Length Ask your Wakefield Metals team about smaller/larger quantities

Tube - Welded Seam

AS 1528



OD		Wall Thickness mm	Weight kg/m	T304	T316
mm	inch				
6.35	1/4	0.9	0.120	0003263	
7.94	5/16	0.9	0.156	0003264	
9.52	3/8	0.9	0.191	0003267	
9.52	3/8	1.2	0.257	0003265	0003320
12.70	1/2	0.9	0.261	0003270	
12.70	1/2	1.2	0.344	0003269	0003322
12.70	1/2	1.5	0.418	0003268	0003321
16.00	5/8	1.5	0.538	0003272	0003324
19.00	3/4	1.2	0.539	0003276	0003327
19.00	3/4	1.5	0.661	0003275	0003326
25.40	1	1.2	0.731	0003281	0003330
25.40	1	1.5	0.903	0003280	0003329
31.80	1-1/4	1.5	1.145	0003283	0003331
38.10	1-1/2	1.2	1.110	0003287	0003332
38.10	1-1/2	1.5	1.437	0003286	0003333
50.80	2	1.5	1.863	0003293	0003336
63.50	2-1/2	1.5	2.343	0003296	0003338
76.20	3	1.5	2.819	0003299	0003339
101.60	4	1.5	3.783	0003300	0003341
127.00	5	1.5	5.000	0019301	0019302
152.40	6	1.5	6.050	0016869	0003342

Finish Polished 320 Grit (400 Grit available on indent)
Length 6m

Ornamental Tube

ASTM A554/1995
Not to be used in dairy, wine or other food industries



OD mm	OD inch	Wall Thickness	Weight kg/m	304	316
25.40	1	1.5	0.903	0003310	0003314
31.80	1 - 1/4	1.5	1.145		0003311
38.10	1 - 1/2	1.5	1.437	0003312	0003315
50.80	2	1.5	1.863	0003313	0003316

Finish 600 grit, polished
Length 6m
Uses Hand rails, furniture, etc.

Spiral Weld Tube

Manufactured to MAF Specifications

Diameter OD & ID mm	Wall Thickness mm	Weight kg/m	Working Pressure MPa	T304L	T316L
127	2.0	6.4	2.8	0003379	0003386
152	1.5	5.9	1.9		0003389
152	2.0	7.5	2.4	0003380	0003390
203	2.0	8.0	1.7	0003382	0003391
254	2.0	12.7	1.4		0003392
254	3.0	19.1	2.1		0003393
305	2.0	15.2	1.1	0003385	0003394

Finish T304L and T316L fully picked and passivated
Length 6m standard or up to 9m (+ 10mm, -0mm)
Spiral Weld Tube is available in both inside and outside diameters

Square Tube - Welded Seam

ASTM A554



Dimensions mm	Wall Thickness mm	Weight kg/m	T304
19.05 x 19.05	1.2	0.691	0003345
19.05 x 19.05	1.5	0.852	0003344
25.40 x 25.40	1.2	0.933	0003347
25.40 x 25.40	1.5	1.151	0003346
31.80 x 31.80	1.2	1.185	0003349
31.80 x 31.80	1.5	1.470	0003348
38.10 x 38.10	1.2	1.425	0003352
38.10 x 38.10	1.5	1.780	0003351
50.80 x 50.80	1.2	1.898	0003355
50.80 x 50.80	1.5	2.356	0003355
60.00 x 60.00	3.0	4.550	0019257
80.00 x 80.00	3.0	7.680	0003357
100.00 x 100.00	3.0	9.070	0003359

Finish Polished. (Unpolished tube, T316 and annealed tube to ASTM249 available on request)
Length 6m

Rectangular Tube - Welded Seam

ASTM A554



Dimensions mm	Wall Thickness mm	Weight kg/m	T304
40.0 x 18.0	1.2	1.085	0003372
40.0 x 25.4	1.2	1.221	0003373
40.0 x 25.4	1.5	1.515	0003374
50.8 x 25.4	1.2	1.438	0003375
50.8 x 25.4	1.5	1.868	0003376

Finish Polished. (Unpolished tube, T316 and annealed tube to ASTM249 available on request)
Length 6m

Tube Weld Bend 90°- Long Radius

Manufactured to MAF Specifications



Nominal Pipe Size OD		Wall Thickness (T) mm	Centre Line Radius (R) mm	Centre to Face (A) mm	(B) mm	T304	T316
mm	inch						
12.7	1/2	1.2	25.4	44.5	19.1		0003508
15.9	5/8	1.2	25.4	57.2	31.8	0003461	0003509
19.0	3/4	1.2	34.9	63.5	28.6	0003463	0003511
19.0	3/4	1.5	34.9	63.5	28.6	0003462	0003510
25.4	1	1.2	44.5	66.7	22.2	0003465	0003513
25.4	1	1.5	44.5	66.7	22.2	0003464	0003512
31.8	1-1/4	1.2	57.2	88.9	31.8	0003467	0003515
31.8	1-1/4	1.5	57.2	88.9	31.8	0003466	0003514
38.1	1-1/2	1.2	76.2	111.1	34.9	0003470	0019333
38.1	1-1/2	1.5	76.2	111.1	34.9	0003469	0003516
44.5	1-3/4	1.5	79.4	117.5	38.1	0003472	0003517
50.8	2	1.2	101.6	133.4	31.8	0003474	0003519
50.8	2	1.5	101.6	133.4	31.8	0003473	0003518
63.5	2-1/2	1.5	114.3	152.4	38.1	0003476	0003520
76.2	3	1.5	139.7	177.8	38.1	0003478	0003521
101.6	4	1.5	152.4	177.8	25.4	0003479	0003522
127.0	5	1.5	190.5	230.5	40.0	0019334	0019335
152.4	6	1.5	228.6	268.6	40.0	0019342	0019343

Finish Polished OD. Pickled ID

Tube Weld Bend 90°- Short Radius

Manufactured to MAF Specifications



Nominal Pipe Size OD		Wall Thickness mm	Centre Line Radius (R) mm	Overall Dimensions (D) mm	T304	T316
mm	inch					
25.4	1	1.5	38.1	51 x 51	0003454	0003500
31.8	1-1/4	1.5	57.2	76 x 76	0019336	0003501
38.1	1-1/2	1.5	57.2	71 x 71	0003455	0003502
50.8	2	1.5	76.2	101 x 101	0003456	0003503
63.5	2-1/2	1.5	101.6	133 x 133	0003457	0003504
76.2	3	1.5	114.3	165 x 165	0003458	0003505

Finish Polished OD. Pickled ID

Tube Weld Bend 180°

Manufactured to MAF Specifications

Nominal Pipe Size OD		Wall Thickness ± 1mm	Centres (C) ± 1mm	Overall Height (D) ± 1mm	Centre Line Radius (R) ± 1 mm	(B) mm	T304	T316
mm	inch							
25.4	1	1.5	91	79	44.5	22.2	0019043	0019303
31.8	1-1/4	1.5	118	105	57.2	31.8	0018889	0019304
38.1	1-1/2	1.5	155	130	76.2	34.9	0003498	0019305
50.8	2	1.5	204	159	101.6	31.8	0003499	0019306
63.5	2-1/2	1.5	232	184	114.3	38.1	0019245	0019307
76.2	3	1.5	284	216	139.7	38.1	0019246	0019308
101.6	4	1.5	311	229	152.4	25.4	0019247	0019309
101.6	4	2.0	311	229	152.4	25.4	0019248	0019310

Finish Polished OD. Pickled ID

Tube Weld Bend 45° - Long Radius

Manufactured to MAF Specifications



Nominal Pipe Size		Wall Thickness mm	Centre Line Radius (R) mm	(B) mm	T304	T316
mm	inch					
25.4	1	1.5	44.5	22.2	0003487	0003530
31.8	1-1/4	1.2	57.2	31.8	0003489	0019311
31.8	1-1/4	1.5	57.2	31.8	0003488	0003531
38.1	1-1/2	1.2	76.2	34.9	0003491	0019312
38.1	1-1/2	1.5	76.2	34.9	0003490	0003532
50.8	2	1.5	101.6	31.8	0003492	0003533
63.5	2-1/2	1.5	114.3	38.1	0003494	0003534
76.2	3	1.5	139.7	38.1	0003495	0003535
101.6	4	1.5	152.4	25.4	0003496	0003536

Finish Polished OD. Pickled ID

Tube Equal Tee

Manufactured to MAF Specifications



Nominal Pipe Size		Wall Thickness mm	Branch Length From Tee Centre mm	Overall Length mm	T316
mm	inch				
25.4	1	1.6	38.0	76	0003544
31.8	1-1/4	1.6	44.5		0003546
38.1	1-1/2	1.6	51.0	102	0003548
50.8	2	1.6	63.5	127	0003550
63.5	2-1/2	1.6	76.0	152	0003552
76.2	3	1.6	89.0	178	0003554
101.6	4	1.6	114.0	228	0003557
127.0	5	2.0	140.0	280	0019410
152.4	6	2.0	170.0	340	0003560

• Denotes Normal Stock Range other sizes available on indent

Finish Polished OD. Pickled ID

Tube Pulled Tee

Manufactured to MAF Specifications



Nominal Pipe Size		Overall Length mm	T316 Wall Thickness 1.5 mm
mm	inch		
25.4	1	76.0	0003545
31.8	1-1/4	89.0	0003547
38.1	1-1/2	102.0	0003549
50.8	2	127.0	0003551
63.5	2-1/2	152.0	0003553
76.2	3	178.0	0003555
101.6	4	228.0	0003556
127.0	5	280.0	0003558
152.4	6	170.0	0003559*

Finish Polished OD. Pickled ID

* denotes a wall thickness of 2mm

Tube Reducers

Concentric, Eccentric

Manufactured to MAF Specifications



OD		Concentric Reducer			Eccentric Reducer		
Large End Small End		Overall Length (H) mm	Thickness (T) mm	T316	Overall Length (H) mm	Thickness (T) mm	T316
OD ₁ mm	OD ₂ mm						
25.4	12.7	25	1.5	0003621	25	1.5	
25.4	19.0	25	1.5	0003622	25	1.5	
31.8	19.0	30	1.5	0003623	30	1.5	
31.8	25.4	30	1.5	0003624	30	1.5	0003650
38.1	19.0	30	1.5	0003625	30	1.5	
38.1	25.4	30	1.5	0003626	30	1.5	
38.1	31.8	30	1.5	0003627	30	1.5	
50.8	25.4	40	1.5	0003628	40	1.5	0003651
50.8	31.8	40	1.5	0003629	40	1.5	0003652
50.8	38.1	40	1.5	0003630	40	1.5	
63.5	25.4	50	1.5		50	1.5	0003654
63.5	31.8	50	1.5	0003631	50	1.5	
63.5	38.1	50	1.5	0003632	50	1.5	0003655
63.5	50.8	50	1.5	0003633	50	1.5	0003656
76.2	25.4	60	1.5	0003634	60	1.5	
76.2	38.1	60	1.5	0003635	60	1.5	0003658
76.2	50.8	60	1.5	0003636	60	1.5	0003653
76.2	63.5	60	1.5	0003637	60	1.5	0003657
101.6	25.4	70	1.5	0003638	70	1.5	
101.6	50.8	70	1.5	0003639	70	1.5	0003660
101.6	63.5	70	1.5	0003640	70	1.5	
101.6	76.2	70	1.5	0003641	70	1.5	0003661
127.0	76.2	100	2.0	0003643	100	2.0	
127.0	101.6	100	1.5	0003644	100	2.0	
152.4	76.2	120	2.0	0003645	120	2.0	
152.4	101.6	120	2.0	0003646	120	2.0	0003663
203.2	152.4	150	2.0	0003648	150	2.0	0003665

Tube Slip On Plate Flange










Tube Size		Slip on Plate Flanges To Suit Tube - T316
mm	inch	
19.05	3/4	0004032
25.4	1	0004033
31.8	1-1/4	0004034
38.1	1-1/2	0004035
50.8	2	0004036
63.5	2-1/2	0004037
76.2	3	0004038
101.6	4	0004039
125.0	5	0004040
152.4	6	0004041
203.2	8	0004042
254.0	10	0004043
304.8	12	0004044

Refer to Wakefield Metals Flange Specification Tables for Flange Dimensions
Ask your Wakefield Metals team for your copy

Tube RJT Fittings

Manufactured to 3-A Specifications

Pipe Size		Welding Male Part T316	Welding Liner T316	Union Blanks T304
mm	inch			
25.4	1	0004099	0004106	0004113
38.1	1-1/2	0004100	0004107	0004114
50.8	2	0004101 	0004108 	0004115 
63.5	2-1/2	0004102	0004109	0004116
76.2	3	0004103	0004110	0004117
101.6	4	0004104	0004111	0004118
152.4	6	0004105	0004112	0004119

Pipe Size		Hex Nuts T304	Round Slotted Nuts T316	O-Ring Blue Santoprene	Rubber Seal-Stepped
mm	inch				
25.4	1	0004134	0004140	0004120	0004126
38.1	1-1/2	0004135 	0004141 	0004121 	0004128 
50.8	2	0004136	0004142	0004122	0004129
63.5	2-1/2	0004137	0004143	0004123	0004130
76.2	3	0004138	0004144	0004124	0004131
101.6	4	0004139	0004145	0004125	0004132
152.4	6		0004146		0004133

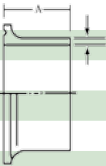
Tube Tri Fittings

Manufactured to 3-A Specifications

Pipe Size		Tri Clamp	Tri Blank		
		Stock Holding T304	Depth mm	Outside Diameter mm	Stock Holding T316
mm	inch				
25.4	1	0003732	6.35	50.39	0003763
38.1	1-1/2	0003733	6.35	50.39	0003764
50.8	2	0003734	6.35	63.91	0003765
63.5	2-1/2	0003735	6.35	77.39	0003766
76.2	3	0003736	6.35	90.91	0003767
101.6	4	0003737	7.92	118.92	0003768
127.0	5	0019411			0019412
152.4	6	0003738			0003769



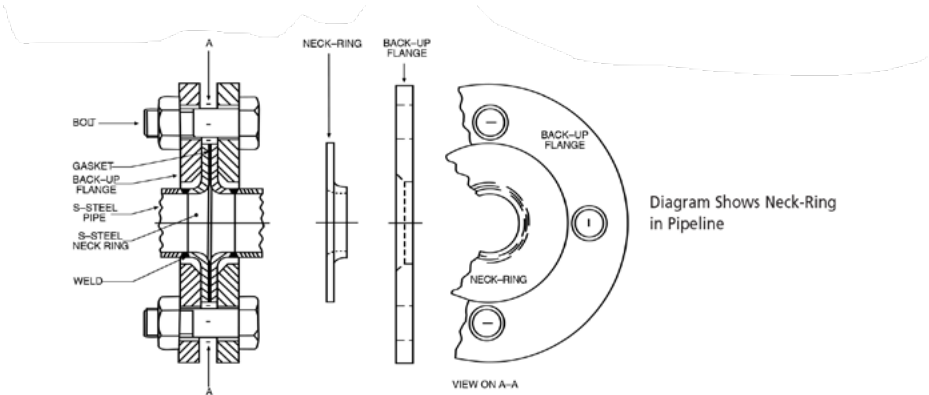
Pipe Size		Welding Ferrule			EPDM Seal Stock Holding T316
		Depth (A) mm	Thickness T316	Stock Holding T316	
mm	inch				
25.4	1	28.58	1.52	0003740	0003756
38.1	1-1/2	28.58	1.52	0003744	0003757
50.8	2	28.58	1.52	0003746	0003758
63.5	2-1/2	28.58	2.03	0003749	0003759
76.2	3	28.58	2.03	0003752	0003760
101.6	4	28.58	2.03	0003754	0003761
127.0	5	21.9	2.03	0019413	0019414
152.4	6	21.90	2.03	0003755	0003762



Tube Pressed Neck Ring

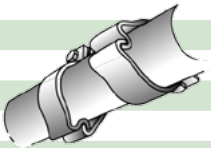
Size to Suit OD and ID Tube			Pressed Neck Ring Standard 1.6mm WT T316L	Pressed Neck Ring Heavy 3mm WT T304L	Pressed Neck Ring Heavy 3mm WT T316L
mm		inch			
12.7	OD	1/4		0019313	
19	OD	3/4		0019314	0003584
25.4	OD	1	0003586	0019315	0003585
31.8	OD	1-1/4	0019321	0003578	0019322
38.1	OD	1-1/2	0003587	0003579	0015358
51	OD	2	0003589	0003580	0003588
63.5	OD	2-1/2	0003591	0003581	0003590
76.2	OD	3	0003593	0019316	0003592
101.6	OD	4	0003595	0019317	0003594
127	ID	5		0019318	0003596
152.4	ID	6		0019319	0003597
203.2	ID	8		0019320	0003598
254	ID	10		0003582	0003599

Galvanised back-up flanges (table E) available on request
 WT = Wall thickness.
 Refer to Wakefield Metals flange comparison tables for neck ring dimensions.



Tube Clamps

Size		Tube Clamp Plain
mm	inch	
25.4	1	0003723
31.8	1-1/4	0003724
38.1	1-1/2	0003725
50.8	2	0003726
63.5	2-1/2	0003727
76.2	3	0003728
101.6	4	0003729



All Tube Clamps are made from T304 Tube Clamps are hinge type electropolished finish with one set screw and nut.

Saddle Clamps

Size		Saddle Clamp T304
mm	inch	
12.70	1/2	0003716
19.05	3/4	0003717
125.00	5	0003718
152.40	6	0003719
203.20	8	0003720
254.00	10	0003721
300.00	12	0003722



* Special sizes could be supplied based on quantity

Pipe - Schedule 10s

ASTM A312



Size - NB		OD x Wall Thickness mm	Weight kg/m	T304L	T316L
mm	inch				
9.53	3/8	17.15 x 1.65	0.63	0003428	
12.70	1/2	21.34 x 2.11	1.00	0003429	0003401
19.05	3/4	26.67 x 2.11	1.28	0003430	0003402
25.40	1	33.41 x 2.77	2.09	0003431	0003403
31.80	1-1/4	42.16 x 2.77	2.70	0003432	0003404
38.10	1-1/2	48.26 x 2.77	3.11	0003433	0003405
50.80	2	60.03 x 3.05	3.93	0003434	0003406
63.50	2-1/2	73.03 x 3.05	5.26	0003435	0003407
76.20	3	88.90 x 3.05	6.45	0003436	0003408
88.90	3-1/2	101.60 x 3.05	7.40		0003409
101.60	4	114.30 x 3.05	8.36	0003437	0003410
152.40	6	168.28 x 3.40	13.84	0003438	0003411

Pipe - Schedule 40s

ASTM A312



Size - NB		OD x Wall Thickness mm	Weight kg/m	T304L	T316L
mm	inch				
6.35	1/4	13.72 x 2.24	0.64		0003415
9.53	3/8	17.15 x 2.31	0.85	0003439	0003416
12.70	1/2	21.34 x 2.77	1.29	0003440	0003417
19.05	3/4	26.67 x 2.87	1.71	0003441	0003418
25.40	1	33.41 x 3.38	2.54	0003442	0003419
31.80	1-1/4	42.16 x 3.56	3.43	0003443	0003420
38.10	1-1/2	48.21 x 3.68	4.11	0003444	0003421
50.80	2	60.03 x 3.91	5.52	0003445	0003422
63.50	2-1/2	73.03 x 5.16	8.76	0003446	0003423
76.20	3	88.90 x 5.49	11.45	0003447	0003425
101.60	4	114.30 x 6.02	16.31	0003448	0003426
152.40	6	168.28 x 7.11	28.68	0003449	0003427

Finish Welded Seam. Annealed
Length Available in 6.1m Lengths

For dimensions and theoretical weights of schedule pipe and theoretical bursting pressure of pipe contact your Wakefield Metals team

Pipe BSP Fittings

Class 150 (150 lb working pressure)

Pipe Size		Socket T316	Barrel Nipple T316	Hexagonal Nipple T316
mm	inch			
3.18	1/8	0003896	0003908	0019323
6.35	1/4	0003897	0003909	0012776
9.53	3/8	0003898	0003910	0003944
12.70	1/2	0003899	0003911	0003945
19.05	3/4	0003900	0003912	0003946
25.40	1	0003901	0003913	0003947
31.80	1-1/4	0003902	0003915	0003948
38.10	1-1/2	0003903	0003916	0003949
50.80	2	0003904	0003917	0003950
63.50	2-1/2	0003905	0003918	0003951
76.20	3	0003906	0003919	0003952
101.60	4	0003907	0003920	0019324

Pipe Size		Elbow T316	Tee T316	Welding Nipple T316
mm	inch			
3.18	1/8	0003921	0003933	0015423
6.35	1/4	0003922	0003934	0003954
9.53	3/8	0003923	0003935	0003955
12.70	1/2	0003924	0003936	0003956
19.05	3/4	0003925	0003937	0003957
25.40	1	0003926	0003938	0003958
31.80	1-1/4	0003927	0003939	0003959
38.10	1-1/2	0003928	0003940	0003960
50.80	2	0003929	0003941	0003961
63.50	2-1/2	0003930	0003942	0003962
76.20	3	0003931	0003943	0003963
101.60	4	0003932	0019325	0003964

Pipe BSP Fittings

Class 150 (150 lb working pressure)

Pipe Size		End Cap T316	Mac Union T316	Plug T316
mm	Inch			
3.18	1/8	0019326	0004006	0003986
6.35	1/4	0019327	0004005	0003987
9.53	3/8	0019328	0004007	0003988
12.70	1/2	0003995	0004008	0003989
19.05	3/4	0003996	0004009	0003990
25.40	1	0003997	0004010	0003991
31.80	1-1/4	0013881	0004011	0003992
38.10	1-1/2	0003998	0004012	0003993
50.80	2	0014085	0004013	0003994
63.50	2-1/2	0003999	0004014	0019330
76.20	3	0019329	0004015	0019331

Pipe Size		Hexagonal Reducing Bush T316
mm	Inch	
6.35 x 3.17	1/4 x 1/8	0003971
9.52 x 6.35	3/8 x 1/4	0003973
12.7 x 9.52	1/2 x 3/8	0003974
12.7 x 6.35	1/2 x 1/4	0003975
19.0 x 9.52	3/4 x 3/8	0003976
19.0 x 12.7	3/4 x 1/2	0003977
25.4 x 12.7	1 x 1/2	0003978
25.4 x 19.0	1 x 3/4	0003979
31.8 x 25.4	1-1/4 x 1	0003981
38.1 x 31.8	1-1/2 x 1-1/4	0003982
50.8 x 38.1	2 x 1-1/2	0003983
63.5 x 50.8	2-1/2 x 2	0003984
76.2 x 63.5	3 x 2-1/2	0003985

Pipe 90deg Elbow - Long Radius

Butt Weld Fitting



Nominal Pipe Size		Outside Diameter (OD) mm	Centre to End (A) mm	Schedule 10S			Schedule 40S		
				Wall Thickness (T) mm	T304L	T316L	Wall Thickness (T) mm	T304L	T316L
12.70	1/2	21.3	38.1	2.1	0003775		2.8		0003851
19.05	3/4	26.7	28.6	2.1	0003776		2.9		0003852
25.40	1	33.4	38.1	2.8	0003777	0003842	3.4	0003785	0003853
31.80	1-1/4	42.2	47.6	2.8	0003778	0003843	3.6		0003854
38.10	1-1/2	48.3	57.2	2.8	0003779	0003844	3.7	0003786	0003855
50.80	2	60.3	76.2	2.8	0003780	0003845	3.9	0003787	0003856
63.50	2-1/2	73.0	95.3	3.0	0003781	0003847	5.2		0003857
76.20	3	88.9	114.3	3.0	0003782	0003846	5.5	0003788	0003858
101.60	4	114.3	152.4	3.0	0003783	0003849	6.0	0003789	0003859
152.40	6	168.3	228.6	3.4	0003784	0003850	7.1		0003860

Pipe Equal Tee

Butt Weld Fitting



Nominal Pipe Size		Outside Diameter (OD) mm	From Tee Centre (C) mm	Schedule 10S			Schedule 40S		
				Wall Thickness (T) mm	T304L	T316L	Wall Thickness (T) mm	T304L	T316L
12.70	1/2	21.3	15.9	2.1	0003791		2.8		
19.05	3/4	26.7	11.1	2.1	0003792		2.9		0003869
25.40	1	33.4	22.2	2.8	0003793	0003862	3.4	0003801	0003870
31.80	1-1/4	42.2	25.4	2.8	0003794	0003863	3.6		0003871
38.10	1-1/2	48.3	28.6	2.8	0003795	0003864	3.7	0003802	0003872
50.80	2	60.3	34.9	2.8	0003796	0003865	3.9	0003803	0003873
63.50	2-1/2	73.0	44.5	3.0	0003797	0003866	5.2		
76.20	3	88.9	50.8	3.0	0003798	0003867	5.5	0003804	0003874
101.60	4	114.3	63.5	3.0	0003799	0003868	6.0	0003805	0003875
152.40	6	168.3	95.3	3.4	0003800		7.1		

Pipe Reducers - Eccentric, Concentric

Butt Weld Fitting



Nominal Pipe Size	Outside Diameter (OD)		Overall Length (H)	Concentric Reducer				Eccentric Reducer
	OD1	OD2		Schedule 10S		Schedule 40S		Schedule 40S
mm	mm	mm	mm	T304L	T316L	T304L	T316L	T304L
19.05 x 12.70	19.0	12.7	38.1	0003807				0003828
25.40 x 12.70	25.4	12.7	50.8	0003808				0003829
25.40 x 19.05	25.4	19.0	50.8	0003809				0003830
31.80 x 25.40	31.8	25.4	50.8	0003810	0003876			0003831
38.10 x 25.40	38.1	25.4	63.5	0003811	0003877	0003822	0003889	
38.10 x 31.80	38.1	31.8	63.5	0003812				0003832
50.80 x 25.40	50.8	25.4	76.2	0003813				0003833
50.80 x 31.80	50.8	31.8	76.2		0003879			
50.80 x 38.10	50.8	38.1	76.2	0003814	0003880	0003823		0003834
63.50 x 50.80	63.5	50.8	88.9	0003816	0003881	0003824	0003891	0003835
76.20 x 50.80	76.2	50.8	88.9	0003817	0003882	0003825	0003892	0003836
76.20 x 63.50	76.2	63.5	88.9	0003818				0003837
101.60 x 50.80	101.6	50.8	102	0003819	0003884	0003826	0003893	0003838
101.60 x 76.20	101.6	76.2	102	0003820				0003839
152.40 x 101.60	152.4	101.6	139.7	0003821				

Ask your Wakefield Metals team for other sizes available

Superclean Pickling Paste

SUPERCLEAN Pickling Paste is a high performance gel pickling agent for stainless steel. It is used to remove the black oxide marks or burn scale left during welding of stainless steel.

After use with **SUPERCLEAN** the weld area should look the same as the rest of the stainless steel being used. **SUPERCLEAN** leaves a clean professional finished stainless steel weld area, and removes the free iron contamination which is the major cause of corrosion.

Benefits

- A fast acting one step treatment
- Superior adhesion on vertical surfaces
- Completely water rinsable
- A non residual treatment



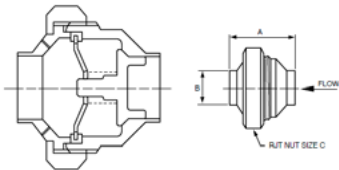
SUPERCLEAN is available in a 2.5kg jar. Each pack comes with an acid resistant application brush.

Pipe Flanges



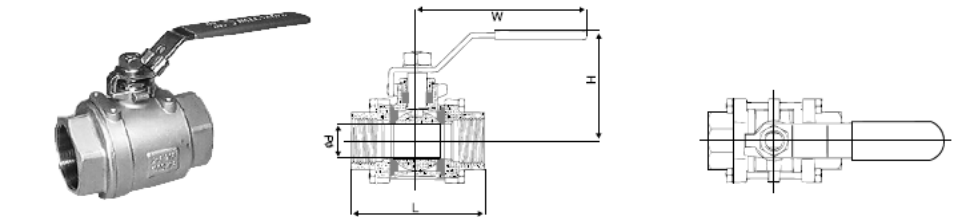
Nominal Pipe Size		Weld Neck U in S T316/321 Exclusive to Wakefield Metals	Slip On T316*
mm	inch		
19.05	3/4	0019240	0004045
25.40	1	0004078	0004046
31.80	1-1/4	0019241	0004047
38.10	1-1/2	0004079	0004048
50.80	2	0004080	0004049
63.50	2-1/2	0004081	0004050
76.20	3	0004082	0004051
101.60	4	0004083	0004052
152.40	6	0004084	0004053
203.20	8	0019242	0004054
254.0 0	10	0019243	
304.8 0	12	0019244	

Sanitary Non Return Valve



Size		Overall Length +/- 0.3mm	RJT Nut Size mm	T316
mm	inch			
38.1	1-1/2	82.5	50.8	0004161
50.8	2	85.0	63.5	0004162
76.2	3	144.0	102.0	0004163

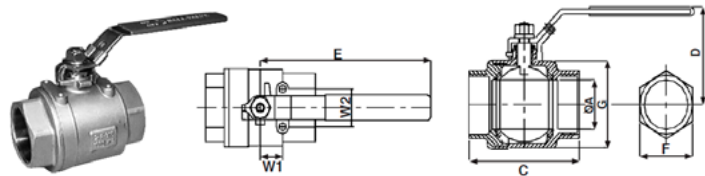
3 Piece Screwed End Full Bore Valve



Size		OD mm	L mm	H mm	W mm	CV mm	T316
mm	inch						
9.53	3/8	12.7	65	42	98	7	0004148
12.70	1/2	15.0	66	49	115	10	0004149
19.05	3/4	20.0	83	52	115	25	0004150
25.40	1	25.0	95	62	143	35	0004151
31.80	1-1/4	32.0	111	66	143	46	0004152
38.10	1-1/2	38.0	130	77	178	80	0004153
50.80	2	50.8	151	85	178	110	0004154

Body, end cap, ball and stem are manufactured from T316. Handle, gland nut, nut and washer are manufactured from T304.
 CV is defined as the volume of liquid in GPM that a valve will carry (with a pressure drop of 6.9KPa when the liquid is water at 15.6°C.)

2 Piece Ball Valve



Size inch	A	C	D	E	W1	W2	F	G	W(kg)	T316
3/8	12.7	55	46	108	12.7	28.5	22.0	28.5	0.24	0004166
1/2	15.0	65	56	108	12.7	28.5	26.0	34.0	0.35	0004167
3/4	20.0	74	62	132	22.4	35.0	32.5	40.5	0.54	0004168
1	25.0	88	70	160	22.4	35.0	40.0	48.0	0.88	0004169
1-1/4	32.0	102	78	160	22.4	38.1	49.0	59.5	1.32	0004170
1-1/2	38.0	110	92	195	22.4	38.1	55.0	70.0	1.90	0004171
2	50.0	125	102	195	22.4	38.1	69.0	86.5	2.98	0004172

Working Pressure 1000 psi WOG - Test Pressure Seat (air) 80 psi shell (hydro static) 1500 psi

Wakefield Fasteners

Wakefield fasteners stock a wide range of fasteners to fit out key market segments being industrial, manufacturing, construction, marine and retail. Also, we can hold specific stock for your requirements, as well as indenting large quantities direct from overseas suppliers.

- **Stainless Steel Bolts**



- **Stainless Steel Self Tappers**



- **Stainless Steel Nuts**



- **Stainless Steel Washers**



- **Threaded Rod**



- **Rivets**



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