

FLANGE PARAMETER TABLE

Table 1 PN0.6MPa (6 pressure) plate flat welded steel pipe flange (mm)

DN	Outer diameter of pipe A1		Connection size					Sealing surface size		Flange thickness	Inner diameter of flange B1		Groove width	Flange theory weight series Z (kg)
			Outer diameter of flange Series 1/ Series 2 D	Bolt hole Center circle Diameter K	Bolt hole diameter Series 1/ Series 2 L	Bolts and studs								
	international A pipe	domestic B pipe				Quantity n	Thread Th Series 1/ Series 2	d	f	C	A	B	b	
10	17.2	14	75	50	12	4	M10	32	2	12	18	15	3	0.32
15	21.3	18	80	55	12	4	M10	40	2	12	22	19	3	0.34
20	26.9	25	90	65	12	4	M10	50	2	14	27.5	26	3	0.54
25	33.7	32	100	75	12	4	M10	60	2	14	34.5	33	4	0.64
32	42.4	38	120	90	14	4	M12	70	2	16	43.5	39	4	1.10
40	48.3	45	130	100	14	4	M12	80	3	16	49.5	46	4	1.22
50	60.3	57	140	110	14	4	M12	90	3	16	61.5	59	4	1.35
65	76.1	76	160	130	14	4	M12	110	3	16	77.5	78	5	1.67
80	88.9	89	190/185	150	18	4	M16	125	3	18	90.5	91	5	2.48
100	114.3	108	210/205	170	18	4	M16	145	3	18	116	110	5	2.89
125	139.7	133	240/235	200	18	8	M16	175	3	20	141.5	135	5	3.94
150	168.3	159	265/260	225	18	8	M16	200	3	20	170.5	161	5	4.47
175		194	290	255	18	8	M16	230	3	22		196	6	5.54
200	219.1	219	320/315	280	18	8	M16	255	3	22	221.5	222	7	6.07
225		245	340	305	18	8	M16	280	3	22		248	8	6.60
250	273	273	375/370	335	18	12	M16	310	3	24	276.5	276	9	8.03
300	323.9	325	440/435	395	23	12	M20	362	4	24	327.5	328	9	10.30
350	355.6	377	490/485	445	23	12	M20	415	4	26	359.5	380	10	12.59
400	406.4	426	540/535	495	23	16	M20	462	4	28	411	430	10	15.20
450	457	480	595/590	550	23	16	M20	518	4	28	462	484	10	17.59
500	508	530	645/640	600	23	20/16	M20	568	4	30	513.5	534	10	20.67 Attention
600	610	630	755	705	26/25	20	M24/M22	670	5	30	616.5	634	10	26.57
700	711	720	860	810	26/25	24	M24/M22	755	5	32	715	724	10	37.10
800	813	820	975	920	30	24	M27	880	5	32	817	824	10	46.20
900	914	920	1075	1020	30	24	M27	980	5	34	918	924	10	55.10
1000	1016	1020	1175	1120	30	28	M27	1080	5	36	1020	1024	10	64.36
1200	1219	1220	1405/1400	1340	34	32	M30	1295	5	30	1223	1224	12	73(FYI)
1300		1320	1520	1450	34	32	M30	1405	5	30		1324	12	80(FYI)
1400	1422	1420	1630/1620	1560	36/34	36	M33/M30	1510	5	34	1426	1424	14	105(FYI)
1500		1520	1720	1660	34	36	M30	1610	5	34		1524	14	115(FYI)
1600	1626	1620	1830/1820	1760	36/34	40	M33/M30	1710	5	36	1630	1624	16	125(FYI)
1750			1995	1920	41	44	M36	1860	5	36			16	155(FYI)
1800	1829	1820	2045	1970	41	44	M36	1910	5	38	1833	1824	17	170(FYI)
2000	2032	2020	2265	2180	42/48	48	M39/M42	2110	5	38	2036	2024	19	210(FYI)
2200			2475	2390	48	52	M42	2330	6	40			20	240(FYI)
2400			2685	2600	48	56	M42	2540	6	42			22	300(FYI)

FLANGE PARAMETER TABLE

Table 2 PN1.0MPa (10 pressure) plate flat welded steel pipe flange (mm)

DN	Outer diameter of pipe A1		Connection size					Sealing surface size		Flange thickness	Inner diameter of flange B1		Groove width	Flange theory weight series Z (kg)
			Outer diameter of flange Series 1/ Series 2 D	Bolt hole Center circle Diameter K	Bolt hole diameter Series 1/ Series 2 L	Bolts and studs								
	international A pipe	domestic B pipe				Quantity n	Thread Th Series 1/ Series 2	d	f	C	A	B	b	
10	17.2	14	90	60	14	4	M12	40	2	12	18	15	3	0.46
15	21.3	18	95	65	14	4	M12	45	2	12	22	19	3	0.51
20	26.9	25	105	75	14	4	M12	55	2	14	27.5	26	3	0.75
25	33.7	32	115	85	14	4	M12	65	2	14	34.5	33	4	0.89
32	42.4	38	140/135	100	18	4	M16	78	2	16	43.5	39	4	1.40
40	48.3	45	150/145	110	18	4	M16	85	3	18	49.5	46	4	1.71
50	60.3	57	165/160	125	18	4	M16	100	3	18	61.5	59	4	2.09
65	76.1	76	185/180	145	18	4	M16	120	3	20	77.5	78	5	2.84
80	88.9	89	200/195	160	18	3/4	M16	135	3	20	90.5	91	5	3.24 Attention
100	114.3	108	220/215	180	18	8	M16	155	3	22	116	110	5	4.01
125	139.7	133	250/245	210	18	8	M16	185	3	24	141.5	135	5	5.46
150	168.3	159	285/280	240	23	8	M20	210	3	24	170.5	161	5	6.67
175		194	310	270	23	8	M20	240	3	24		196	6	7.44
200	219.1	219	340/335	295	23	8	M20	265	3	24	221.5	222	7	8.24
225		245	365	325	23	8	M20	295	3	24		248	8	9.30
250	273	273	395/390	350	23	12	M20	320	3	26	276.5	276	9	10.7
300	323.9	325	445/440	400	23	12	M20	363	4	28	327.5	328	9	12.9
350	355.6	377	505/500	460	23	16	M20	423	4	28	359.5	380	10	15.9
400	406.4	426	565	515	26/25	16	M24/M22	482	4	30	411	430	10	21.8
450	457	480	615	565	26/25	20	M24/M22	532	4	30	462	484	10	24.4
500	508	530	670	320	26/25	20	M24/M22	585	4	32	513.5	534	10	27.7
600	610	630	780	725	30	20	M27	685	5	36	616.5	634	10	39.4
700	711	720	895	340	30	24	M27	800	5	36	715	724	10	53
800	813	820	1015/1010	950	34	24	M30	905	5	38	817	824	10	67
900	914	920	1115/1110	1050	34	28	M30	1005	5	38	918	924	10	76(FYI)
1000	1016	1020	1230/1220	1160	36/34	28	M33/M30	1115	5	38	1020	1024	10	90(FYI)
1200	1219	1220	1340	1270	36	28	M33	1222	5	40		1124	10	125(FYI)
1300		1320	1455/1450	1380	39/41	32	M36	1325	5	44	1223	1224	12	143(FYI)
1400	1422	1420	1575	1490	41	32	M36	1420	5	46		1324	12	180(FYI)
1500		1520	1575	1590	42/48	36	M39/M42	1525	5	48	1426	1424	14	195(FYI)
1600	1626	1620	1785	1700	48	36	M42	1640	5	50		1524	14	225(FYI)
1750			1915	1820	48/54	40	M45/M48	1750	5	52	1630	1624	16	275(FYI)
1800	1829	1820	2065	1970	54	44	M48	1900	5	54			16	310(FYI)
2000	2032	2020	2115	2020	48/54	44	M45/M48	1950	5	56	1833	1824	17	340(FYI)
2200			2325	2230	48/54	48	M45/M48	2160	5	60	2036	2024	18	420(FYI)
2400			2550	2440	56	52	M52	2370	6	80			20	660(FYI)

FLANGE PARAMETER TABLE

Table 3 PN1.6MPa (16 pressure) plate flat welded steel pipe flange (mm)

DN	Outer diameter of pipe A1		Connection size					Sealing surface size		Flange thickness	Inner diameter of flange B1		Groove width	Flange theory weight series Z (kg)
			Outer diameter of flange Series 1/ Series 2 D	Bolt hole Center circle Diameter K	Bolt hole diameter Series 1/ Series 2 L	Bolts and studs								
	international A pipe	domestic B pipe				Quantity n	Thread Th Series 1/ Series 2	d	f	C	A	B	b	
10	17.2	14	90	60	14	4	M12	40	2	14	18	15	3	0.55
15	21.3	18	95	65	14	4	M12	45	2	14	22	19	3	0.71
20	26.9	25	105	75	14	4	M12	55	2	16	27.5	26	3	0.87
25	33.7	32	115	85	14	4	M12	65	2	18	34.5	33	4	1.18
32	42.4	38	140/135	100	18	4	M16	78	2	18	43.5	39	4	1.60
40	48.3	45	150/145	110	18	4	M16	85	3	20	49.5	46	4	2.00
50	60.3	57	165/160	125	18	4	M16	100	3	22	61.5	59	4	2.61
65	76.1	76	185/180	145	18	4	M16	120	3	24	77.5	78	5	3.45
80	88.9	89	200/195	160	18	8	M16	135	3	24	90.5	91	5	3.71
100	114.3	108	220/215	180	18	8	M16	155	3	24	116	110	5	4.80
125	139.7	133	250/245	210	18	8	M16	185	3	28	141.5	135	5	6.47
150	168.3	159	285/280	240	23	8	M20	210	3	28	170.5	161	5	7.92
175		194	310	270	23	8	M20	240	3	28		196	6	8.81
200	219.1	219	340/335	295	23	12	M20	265	3	30	221.5	222	7	10.10
225		245	365	325	23	12	M20	295	3	30		248	8	11.20
250	273	273	405	355	26/25	12	M24/M22	320	3	32	276.5	276	9	15.70
300	323.9	325	460	410	26/25	12	M24/M22	375	4	32	327.5	328	9	18.10
350	355.6	377	520	470	26/25	16	M24/M22	436	4	34	359.5	380	10	23.30
400	406.4	426	580	525	30	16	M27	485	4	38	411	430	10	31.00
450	457	480	640	585	30	20	M27	515	4	42	462	484	10	40.20
500	508	530	715/705	650	34	20	M30	608	4	48	513.5	534	10	55.20
600	610	630	840	770	36/41	20	M33/M36	718	5	50	616.5	634	10	80.80
700	711	720	910	840	36/41	24	M33/M36	788	5	50	715	724	10	106.0
800	813	820	1025/1020	950	39/41	24	M36	898	5	52	817	824	10	130.5
900	914	920	1125/1120	1050	39/41	28	M36	998	5	44	918	924	10	91FYI
1000	1016	1020	1255	1170	42/48	28	M39/M42	1110	5	46	1020	1024	10	127FYI
1100		1120	1370	1280	42	28	M39	1222	5	50		1124	10	160FYI
1200	1219	1220	1485	1390	48/54	32	M45/M48	1325	5	52	1223	1224	12	186(FYI)
1300		1320	1585	1490	54	32	M48	1425	5	54		1324	12	215(FYI)
1400	1422	1420	1685	1590	48/54	36	M48/M45	1525	5	58	1426	1424	14	245(FYI)
1500		1520	1820	1710	54	36	M48	1640	5	60		1524	14	320(FYI)
1600	1626	1620	1930	1820	55/58	40	M52	1750	5	64	1630	1624	16	360(FYI)
1750			2080	1970	58	44	M52	1900	5	66			16	400(FYI)
1800	1829	1820	2130	2020	55/58	44	M52	1950	5	68	1833	1824	17	430(FYI)
2000	2032	2020	2345	2230	60	48	M56	2150	5	70	2036	2024	18	515(FYI)

Series 1 National Standard GB/T9119-2000/Series 2 Mechanical Industry Standard JB/T81-94

FLANGE PARAMETER TABLE

Table 4 PN2.5MPa (25 pressure) plate flat welded steel pipe flange (mm)

DN	Outer diameter of pipe A1		Connection size					Sealing surface size		Flange thickness	Inner diameter of flange B1		Groove width	Flange theory weight series Z (kg)
			Outer diameter of flange Series 1/ Series 2 D	Bolt hole Center circle Diameter K	Bolt hole diameter Series 1/ Series 2 L	Bolts and studs								
	International A pipe	domestic B pipe				Quantity n	Thread Th Series 1/ Series 2	d	f	C	A	B	b	
10	17.2	14	90	60	14	4	M12	40	2	16	18	15	3	0.64
15	21.3	18	95	65	14	4	M12	45	2	16	22	19	3	0.80
20	26.9	25	105	75	14	4	M12	55	2	18	27.5	26	3	0.99
25	33.7	32	115	85	14	4	M12	65	2	18	34.5	33	4	1.18
32	42.4	38	140/135	100	18	4	M16	78	2	20	43.5	39	4	1.96
40	48.3	45	150/145	110	18	4	M16	85	3	22	49.5	46	4	2.60
50	60.3	57	165/160	125	18	4	M16	100	3	24	61.5	59	4	2.71
65	76.1	76	185/180	145	18	8	M16	120	3	24	77.5	78	5	3.22
80	88.9	89	200/195	160	18	8	M16	135	3	26	90.5	91	5	4.06
100	114.3	108	235/230	190	23	8	M20	160	3	28	116	110	5	6.00
125	139.7	133	270	220	26/25	8	M24/M22	188	3	30	141.5	135	5	8.26
150	168.3	159	300	250	26/25	8	M24/M22	218	3	30	170.5	161	5	10.40
175		194	330	280	26/25	12	M24/M22	248	3	32		196	6	11.90
200	219.1	219	360	310	26/25	12	M24/M22	278	3	32	221.5	222	7	14.50
225		245	395	340	30	12	M27	302	3	34		248	8	17.00
250	273	273	425	370	30	12	M27	332	3	34	276.5	276	9	18.90
300	323.9	325	485	430	30	16	M27	390	4	36	327.5	328	9	26.80
350	355.6	377	555/550	490	34	16	M30	448	4	42	359.5	380	10	34.35
400	406.4	426	620/610	550	36/34	16	M33/M30	505	4	44	411	430	10	44.90
450	457	480	670/660	600	36/34	20	M33/M30	555	4	48	462	484	10	51.92
500	508	530	730	660	36/41	20	M33/M36	610	4	52	513.5	534	10	67.30
600	610	630	845/840	770	41	20	M36	718	5	56	616.5	634	10	95.20
700	711	720	960/955	875	42/48	24	M39/M42	815	5	60	715	724	10	116
800	813	820	1085/1070	990	48	24	M45/M42	930	5	64	817	824	10	150.2
900	914	920	1185/1180	1090	48/54	28	M45/M48	1025	5	58	918	924	10	160(FYI)
1000	1016	1020	1320/1305	1210	55/58	28	M52	1140	5	62	1020	1024	10	210(FYI)
1100		1124	1425	1315	55	28	M52	1245	5	66		1124	10	260(FYI)
1200	1219	1220	1530/1525	1420	55/58	32	M52	1350	5	70	1223	1224	12	300(FYI)
1300		1320	1640	1530	65	32	M56	1450	5	74		1324	12	355(FYI)
1400	1422	1420	1755/1750	1640	60/65	36	M56	1560	5	76	1426	1424	14	450(FYI)
1500		1520	1865	1750	60	36	M56	1670	5	80		1524	14	530(FYI)
1600	1626	1620	1975	1860	60	40	M56	1780	5	84	1630	1624	16	570(FYI)
1800	1829	1820	2195	2070	68	44	M64	1985	5	90	1833	1824	17	700(FYI)
2000	2032	2020	2425	2300	68	48	M64	2210	5	96	2036	2024	18	900(FYI)

Series 1 National Standard GB/T9119-2000/Series 2 Mechanical Industry Standard JB/T81-94

FLANGE PARAMETER TABLE

Table 5 PN4.0MPa (40 pressure) Concave convex surface welded steel pipe flange (mm)

DN	Outer diameter of pipe A1		Connection size					Sealing surface size					thickness	Bore	flange height	Flange neck				Flange theory weight series Z (kg)	
			Outer diameter of flange Series 1/ Series 2 D	Bolt hole Center circle Diameter K	Bolt hole diameter Series 1/ Series 2 L	Bolts and studs		d	X Convex Series 1/ Series 2	Y Concave Series 1/ Series 2	f	f1 f2				Nmax	S	H1	R		
	Quantity n	Thread Th Series 1/ Series 2				Type A	Type B														
10	17.2	14	90	60	14	4	M12	40	34	35	2	4	16	8	35	26	2.3	6	3	0.77	0.67
15	21.3	18	95	65	14	4	M12	45	39	40	2	4	16	12	35	30	3.2	6	3	0.87	0.77
20	26.9	25	105	75	14	4	M12	55	50	51	2	4	16	18	36	38	3.2	6	4	1.09	0.97
25	33.7	32	115	85	14	4	M12	65	57	58	2	4	16	25	38	45	3.2	6	4	1.31	1.18
32	42.4	38	140/135	100	18	4	M16	78	65	66	2	4	18	31	45	56	3.6	6	5	2.17	1.98
40	48.3	45	150/145	110	18	4	M16	85	75	76	3	4	18	38	48	64	3.6	7	5	2.51	2.14
50	60.3	57	165/160	125	18	4	M16	100	87	88	3	4	20	48	48	76	4	8	5	3.34	2.92
65	76.1	76	185/180	145	18	4	M16	120	109	110	3	4	22	66	52	96	5	10	6	4.34	3.85
80	88.9	89	200/195	160	18	8	M16	135	120	121	3	4	24	78	58	112	5.6	12	6	5.52	5.03
100	114.3	108	235/230	190	23	8	M20	160	149	150	3	4.5	26	96	68	138	6.3	12	6	8.39	7.71
125	139.7	133	270	220	26/25	8	M24/M22	188	175	176	3	4.5	28	120	68	160	6.3	12	6	11.06	10.27
150	168.3	159	300	250	26/25	8	M24/M22	218	203	204	3	4.5	30	145	72	186	7.1	12	6	14.16	13.30
(175)		194	350	295	30	8	M27	258	233	234	3	4.5	36	177	88	226	7.1	12	6	21.80	20.97
200	219.1	219	375	320	30	12	M27	282	259	260	3	4.5	38	200	88	250	8	16	8	25.56	24.72
(225)		245	415	355	34	12	M30	315	286	287	3	4.5	40	226	98	280	8	16	8	32.48	31.60
250	273	273	450/445	385	34	12	M30	345	312	313	3	4.5	42	252	102	310	10	18	10	39.87	39.00
300	323.9	325	515/510	450	34	12	M30	408	363	364	4	4.5	46	301	116	368	10	18	10	55.97	53.21
350	355.6	377	580/570	510	36/34	16	M33/M30	465	421	422	4	5	52	351	120	418	11	20	10	75.30	72.29
400	406.4	426	660/655	585	41	16	M36	535	473	474	4	5	58	398	142	480	12.5	20	10	112.02	108.44
450	457	480	685/680	610	41	20	M36	560	523	524	4	5	60	448	146	530	14.2	20	12	112.82	109.70
500	508	530	755	670	42/48	20	M39/M42	612	575	576	4	5	62	495	156	580	16	20	12	142.70	138.60
600	610	630	890	795	48/54	20	M45/M48	730	675/677	676/678	5	6	62	595	176	700	17.5	20	20	167	160(FYI)
700	711	720	995	900	48/54	24	M45/M48	835	777/767	778/768	5	6	68	680	200	780	19	20	20	275	265(FYI)
800	813	820	1140/1135	1030	58	24	M52	960	882/875	883/876	5	6	76	780	220	910	20	20	22	410	400(FYI)

FLANGE PARAMETER TABLE

Table 6 PN6.3MPa (64 pressure) Concave convex surface welded steel pipe flange (mm)

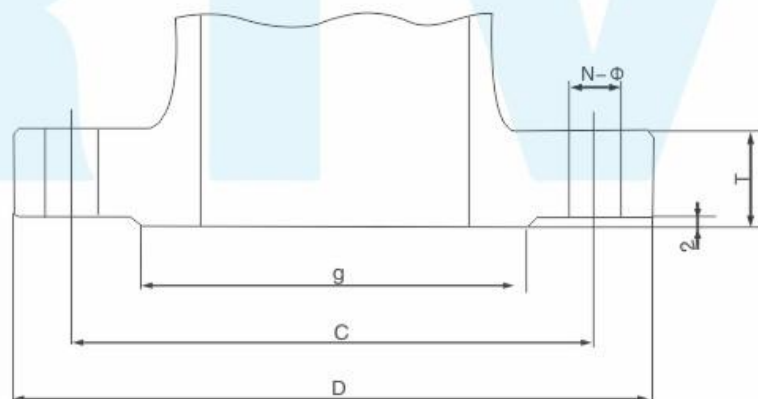
DN	Outer diameter of pipe A1		Connection size					Sealing surface size					thickness C	Bore B	flange height H	Flange neck				Flange theory weight series Z (kg)	
			Outer diameter of flange Series 1/ Series 2 D	Bolt hole Center circle Diameter K	Bolt hole diameter Series 1/ Series 2 L	Bolts and studs		d	X Convex Series 1/ Series 2	Y Concave Series 1/ Series 2	f	f1 f2				Nmax	flange Welding end wall thickness S	straight section H1	radius R		
	Quantity n	Thread Th Series 1/ Series 2																			
	International A pipe	domestic B pipe				Type A	Type B														
10	17.2	14	100	70	14	4	M12	50	34	35	2	4	18	8	48	34	3	6	3	1.12	1.02
15	21.3	18	105	75	14	4	M12	55	39	40	2	4	18	12	48	38	3.2	6	3	1.25	1.14
20	26.9	25	130/125	90	18	4	M16	68	50	51	2	4	20	18	56	48	3.6	6	4	2.12	1.95
25	33.7	32	140/135	100	18	4	M16	78	57	58	2	4	22	25	58	52	3.6	8	4	2.64	2.46
32	42.4	38	155/150	110	23	4	M20	82	65	66	2	4	24	31	62	64	3.6	8	5	3.50	3.28
40	48.3	45	170/165	125	23	4	M20	95	75	76	3	4	24	37	68	74	4	10	5	4.35	3.91
50	60.3	57	180/175	135	23	4	M20	105	87	88	3	4	26	47	70	86	5	10	5	5.29	4.80
65	76.1	76	205/200	150	23	8	M20	130	109	110	3	4	28	64	75	106	6	12	6	7.00	6.43
80	88.9	89	215/210	170	23	8	M20	140	120	121	3	4	30	77	75	120	6	12	6	8.07	7.50
100	114.3	108	250	200	26/25	8	M24/M22	168	149	150	3	4.5	32	94	80	140	7	12	6	11.51	10.80
125	139.7	133	295	240	30	8	M27	202	175	176	3	4.5	36	118	98	172	7.5	12	6	18.02	17.09
150	168.3	159	345/340	280	34	8	M30	240	203	204	3	4.5	38	142	108	206	8.5	12	8	26.45	25.29
(175)		194	375/370	310	34	12	M30	270	233	234	3	4.5	42	174	110	232	8.5	12	8	30.63	29.61
200	219.1	219	415/405	345	36/34	12	M33/M30	300	259	260	3	4.5	44	198	116	264	10.5	16	8	39.63	38.51
(225)		245	430	370	36/34	12	M33/M30	325	286	287	3	4.5	46	222	120	290	10.5	16	8	43.34	42.32
250	273	273	470	400	36/41	12	M33/M36	352	312	313	3	4.5	48	246	122	316	13.5	18	10	53.64	52.47
300	323.9	325	530	460	36/41	16	M33/M36	412	363	364	4	4.5	54	294	136	370	15.5	18	10	73.10	69.97
350	355.6	377	600/595	525	41	16	M36	475	421	422	4	5	60	342	154	430	17.5	20	10	103.50	100.10
400	406.4	426	670	585	42/48	16	M39/M42	525	473	474	4	5	66	386	170	484	20	20	10	143.30	138.90
450	457	480	715	630	48	20	M42	570	523	524	4	5	70	440	186	540	22.5	22	15	160	155(FYI)
500	508	530	800	705	48/54	20	M45	640	575	576	4	5	70	485	200	595	22.5	22	18	215	210(FYI)
600	610	630	930	820	58	20	M52	750	675/677	676/678	5	6	76	585	220	710	25	22	18	320	310(FYI)
700	711	720	1045	935	58	24	M52	865	777/767	778/768	5	6	84	670	240	800	25	24	18	450	435(FYI)
800	813	820	1165	1050	62	24	M56	980	882/875	883/876	5	6	90	765	260	925	25	24	18	540	525(FYI)

Series 1 National Standard GB/T9119-2000/Series 2 Mechanical Industry Standard JB/T81-94

FLANGE PARAMETER TABLE

Table 7 PN10.0MPa (100 pressure) Concave convex surface welding steel pipe method (mm)

DN	Outer diameter of pipe A1		Connection size					Sealing surface size					thickness	Bore	flange height	Flange neck				Flange theory weight series Z (kg)	
			Outer diameter of flange Series 1/ Series 2 D	Bolt hole Center circle Diameter K	Bolt hole diameter Series 1/ Series 2 L	Bolts and studs		d	X Convex Series 1/ Series 2	Y Concave Series 1/ Series 2	f	f1 f2				neck diameter	flange Welding end wall thickness	straight section	radius		
	Quantity n	Thread Th Series 1/ Series 2				Type A	Type B														
	international A pipe	domestic B pipe														C	B	H	Nmax	S	H1
10	17.2	14	100	70	14	4	M12	50	34	35	2	4	18	8	45	34	3	6	3	1.12	1.01
15	21.3	18	105	75	14	4	M12	55	39	40	2	4	20	12	48	38	3.2	6	3	1.37	1.26
20	26.9	25	130/125	90	18	4	M16	68	50	51	2	4	22	18	56	48	3.6	6	4	2.30	2.13
25	33.7	32	140/125	100	18	4	M16	78	57	58	2	4	24	25	58	52	3.6	8	4	2.86	2.67
32	42.4	38	155/150	110	23	4	M20	82	65	66	2	4	24	31	62	64	3.6	8	5	3.50	3.28
40	48.3	45	170/165	125	23	4	M20	95	75	76	3	4	26	37	70	76	4	10	5	4.72	4.28
50	60.3	57	195	145	26/25	4	M24/M22	112	87	88	3	4	28	45	72	86	6	10	5	6.58	6.02
65	76.1	76	220	170	26/25	8	M24/M22	138	109	110	3	4	32	62	84	110	7	12	6	9.20	8.60
80	88.9	89	230	180	26/25	8	M24/M22	148	120	121	3	4	34	75	90	124	7	12	6	10.61	9.97
100	114.3	108	265	210	30	8	M27	172	149	150	3	4.5	38	92	100	146	8	12	6	15.54	14.70
125	139.7	133	315/310	250	34	8	M30	210	175	176	3	4.5	42	112	115	180	10.5	12	6	25.10	24.00
150	168.3	159	355/350	290	34	12	M30	250	203	204	3	4.5	46	136	130	214	11.5	12	8	34.43	33.26
(175)		194	385/380	320	34	12	M30	280	233	234	3	4.5	48	166	135	246	11.5	16	10	41.60	40.47
200	219.1	219	430	360	36/41	12	M33/M36	312	259	260	3	4.5	54	190	145	276	14.5	16	10	57.14	55.80
(225)		245	470	400	41	12	M36	352	286	287	3	4.5	56	212	165	312	14.5	16	10	73.30	71.90
250	273	273	505/500	430	41	12	M36	382	312	313	3	4.5	60	236	170	340	18.5	18	10	89.30	87.90
300	323.9	325	585	500	42/48	16	M39/M42	442	363	364	4	4.5	70	284	195	400	20.5	18	12	137.45	130.10
350	355.6	377	665	560	48/54	16	M45/M48	498	421	422	4	5	76	332	210	460	22.5	20	12	186.00	175.20
400	406.4	426	715	620	48/54	16	M45/M48	558	473	474	4	5	80	376	220	510	25	20	12	223.50	218.50
450	457	480	770	675	58	20	M52	615	523	524	4	5	84	430	235	570	25	20	18	280	270(FYI)
500	508	530	870	760	58	20	M52	690	575	576	4	5	90	465	245	600	30	22	18	350	335(FYI)
600	610	630	990	875	58	24	M52	800	675/677	676/678	5	6	95	570	265	700	30	22	18	460	445(FYI)



GB/T PN16 / PN40(RF)steel

FLANGE PARAMETER TABLE

Table 8 PN2.0MPa (Class 150) American standard neck welded steel pipe flange (mm)

Nominal Diameter		Outer diameter of pipe A1	Connection size					Sealing surface size		Flange thickness C	Bore B	Flange neck N	Flange height H	Theoretical weight kg
NPS (in)	DN		Outer diameter of flange D	Bolt hole Center circle Diameter K	Bolt hole diameter L	Number of bolt holes n	Thread Th.	Protruding surface d	Tai Gao F1					
1 1/2	15	21.3	89	60.5	16	4	M14	35	1.6	11.5	22	30	16	0.41
3/4	20	26.9	98	70	16	4	M14	43	1.6	13	27.5	38	16	0.58
1	25	33.7	108	79.5	16	4	M14	51	1.6	14.5	34.5	49	17	0.80
1 1/4	32	42.4	117	89	16	4	M14	63.5	1.6	16	43.5	59	21	1.07
1 1/2	40	48.3	127	98.5	16	4	M14	73	1.6	17.5	49.5	65	22	1.37
2	50	60.3	152	120.5	18	4	M16	92	1.6	19.5	61.5	78	25	2.01
2 1/2	65	76.1	178	139.5	18	4	M16	105	1.6	22.5	77.5	90	29	3.32
3	80	88.9	190	152.5	18	4	M16	127	1.6	24	90.5	108	30	3.83
4	100	114.3	229	190.5	18	8	M16	157.5	1.6	24	116	135	33	5.40
5	125	139.7	254	216	22	8	M20	186	1.6	24	141.5	164	36	6.26
6	150	168.3	274	241.5	22	8	M20	216	1.6	25.5	170.5	192	40	7.50
8	200	219.1	343	298.5	22	8	M20	270	1.6	29	221.5	246	44	12.3
10	250	273	406	362	26	12	M24	324	1.6	30.5	276.5	305	49	16.2
12	300	323.9	483	432	26	12	M24	381	1.6	32	327.5	365	56	26.5
14	350	355.6	533	476	29.5	12	M27	413	1.6	35	359.5	400	57	34.5
16	400	406.4	597	540	29.5	16	M27	470	1.6	37	411	457	64	45.5
18	450	457	635	578	32.5	16	M30	533.5	1.6	40	462	505	68	48.5
20	500	508	698	635	32.5	20	M30	584	1.6	43	513.5	559	73	61.8
24	600	610	813	749.5	35.5	20	M33	692	1.6	48	616.5	664	83	87.7

Table 9 PN5.0MPa (Class 300) American standard neck welded steel pipe flange mm

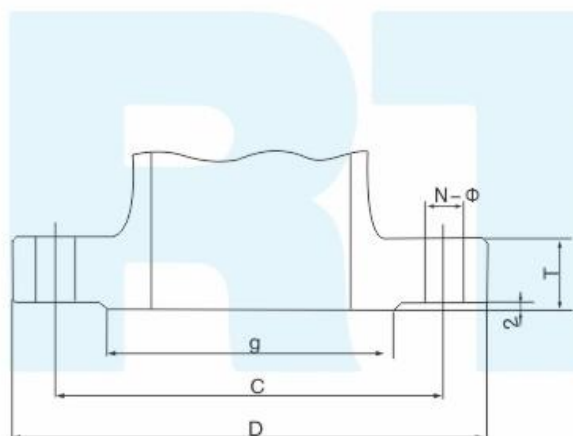
Nominal Diameter		Outer diameter of pipe A1	Connection size					Sealing surface size		Flange thickness C	Bore B	Flange neck N	Flange height H	Theoretical weight kg
NPS (in)	DN		Outer diameter of flange D	Bolt hole Center circle Diameter K	Bolt hole diameter L	Number of bolt holes n	Thread Th.	Protruding surface d	Tai Gao F1					
1 1/2	15	21.3	89	66.5	16	4	M14	35	1.6	14.5	22	38	22	0.63
3/4	20	26.9	117	82.5	18	4	M16	43	1.6	16	27.5	48	25	1.16
1	25	33.7	124	89	18	4	M16	51	1.6	17.5	34.5	54	27	1.37
1 1/4	32	42.4	133	98.5	18	4	M16	63.5	1.6	19.5	43.5	64	27	
1 1/2	40	48.3	156	114.5	22	4	M20	73	1.6	21	49.5	70	30	
2	50	60.3	165	127	18	8	M16	92	1.6	22.5	61.5	84	33	
2 1/2	65	76.1	190	149	22	8	M20	105	1.6	25.5	77.5	100	38	
3	80	88.9	210	168.5	22	8	M20	127	1.6	29	90.5	118	43	
4	100	114.3	254	200	22	8	M20	157.5	1.6	32	116	146	48	
5	125	139.7	279	235	22	8	M20	186	1.6	35	141.5	178	51	
6	150	168.3	318	270	22	12	M20	216	1.6	37	170.5	206	52	
8	200	219.1	381	330	26	12	M24	270	1.6	41.5	221.5	260	62	
10	250	273	444	387.5	29.5	16	M27	324	1.6	48	276.5	321	67	
12	300	323.9	521	451	32.5	16	M30	381	1.6	51	327.5	375	73	
14	350	355.6	584	514.5	32.5	20	M30	413	1.6	54	359.5	426	76	
16	400	406.4	648	571.5	35.5	20	M33	470	1.6	57.5	411	483	83	
18	450	457	711	628.5	35.5	24	M33	533.5	1.6	60.5	462	533	89	
20	500	508	775	686	35.5	24	M33	584	1.6	63.5	513.5	587	95	
24	600	610	915	813	42	24	M39×3	692	1.6	70	616.5	702	104	

Series 1 National Standard GB/T9119-2000/Series 2 Mechanical Industry Standard JB/T81-94

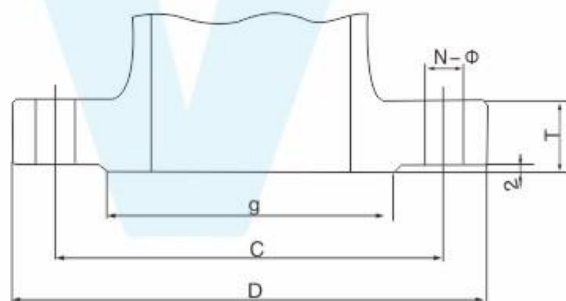
FLANGE PARAMETER TABLE

Table 10 PN11.0MPa (Class 600) American standard neck welded steel pipe flange (mm)

Nominal Diameter		Outer diameter of pipe A1	Connection size					Sealing surface size		Flange thickness C	Bore B	Flange neck N	Flange height H	Theoretical weight kg
			Outer diameter of flange D	Bolt hole Center circle Diameter K	Bolt hole diameter L	Number of bolt holes n	Thread Th.	Protuding surface d	Tai Gao F1					
1/2	15	21.3	95	66.5	16	4	M14	35	6.4	14.5	14	38	52	1.35
3/4	20	26.9	118	82.5	18	4	M16	43	6.4	16	18.5	48	57	1.59
1	25	33.7	124	89	18	4	M16	51	6.4	17.5	24.5	54	62	1.82
1 1/4	32	42.4	133	98.5	18	4	M16	63.5	6.4	21	32	64	67	2.50
1 1/2	40	48.3	156	114.5	22	4	M20	73	6.4	22.5	38	70	70	3.63
2	50	60.3	165	127	18	8	M16	92	6.4	25.5	49	84	73	4.54
2 1/2	65	76.1	190	149	22	8	M20	105	6.4	29	61.5	100	79	6.36
3	80	88.9	210	168.5	22	8	M20	127	6.4	32	72.5	117	83	8.17
4	100	114.3	273	216	26	8	M24	157.5	6.4	38.5	96.5	152	102	16.8
5	125	139.7	330	267	29.5	8	M27	186	6.4	44.5	119.5	189	114	30.9
6	150	168.3	356	292	29.5	12	M27	216	6.4	48	146	222	117	33.1
8	200	219.1	419	349	32.5	12	M30	270	6.4	55.5	187	273	133	50.9
10	250	273	508	432	35.5	16	M33	324	6.4	63.5	238	343	152	85.8
12	300	323.9	560	489	35.5	20	M33	381	6.4	67	279.5	400	156	102.6
14	350	355.6	605	527	39	20	M36×3	413	6.4	70	305.5	432	165	157.5
16	400	406.4	685	603	42	20	M39×3	470	6.4	76.5	350	495	178	218.4
18	450	457	745	654	45	20	M42×3	533.5	6.4	83	397	546	184	252.0
20	500	508	815	724	45	24	M42×3	584	6.4	89	444	610	190	313.3
22	550	559	870	778	48	24	M45×3	641	6.4	95	487	665	197	376.5
24	600	610	940	838	51	24	M48×3	692	6.4	102	530	718	203	443.6



Class 150 / 300Lb (RF)Steel



Class 600Lb (RF)Steel

CHEMICAL COMPOSITION AND MECHANICAL PROPERTY OF COMMONSTEELY WROUGHT STEEL PARTS(STEEL PARTS)

Standard number	Trademark	Chemical composition										Mechanical property				
		C	Si $\geq$	Mn	S $\leq$	P $\leq$	Cr	Ni	Mo	V	Cu	Ob Mpa	Os Mpa	$\delta\%$	$\psi\%$	AK/J
GB12223	WCB	0.30	0.60	1.00	0.04	0.045						485	350	22	35	
GB12229	WCC	0.25	0.60	1.2	0.04	0.045						485	275	22	35	
ZBJC8015	ZG1Cr5Mo	0.15	0.50	0.60	0.035	0.030	4.0~6.0		0.50~0.65			590	390	18	-	
ZBJC8015	ZG20CrMoV	0.18~0.24	0.17~0.37	0.4~0.70	0.030	0.030	0.9~1.2		0.50~0.70		2.00~3.0	500	320	14	30	30
ZBJC8015	ZG15Cr1Mo1V	0.14~0.20	0.17~0.30	0.4~0.70	0.030	0.030	1.20~1.7		1.00~1.2		3.00~4.0	500	350	14	30	30
GB/T5263	WC1	0.25	0.60	0.5~0.80	0.40	0.045			0.45~0.65			450	240	24	35	
GB/T5263	WC5	0.20	0.60	0.4~0.70	0.040	0.045	0.50~0.9	0.06~1.0	0.90~1.2			483	276	20	35	
GB/T5263	WC6	0.20	0.60	0.5~0.80	0.040	0.045	1.0~1.50		0.45~0.65			483	276	20	35	
GB/T5263	WC9	0.18	0.60	0.4~0.70	0.040	0.045	2.0~2.75		0.90~1.20			483	276	20	35	
GB12230 (GB2100)	ZG00Cr18Ni10	0.03	1.5	0.8~0.20	0.040	0.030	17.0~20	8.0~11.0				392	177	25	(32)	(98)
GB12230 (GB2100)	ZG0Cr18Ni9	0.08	1.5	0.8~0.20	0.040	0.030	17.0~20	8.0~11.0				441	196	25	(32)	(98)
GB12230 (GB2100)	ZG1Cr18Ni9	0.12	1.5	0.8~0.20	0.045	0.030	17.0~20	8.0~11.0				441	196	25	(32)	(98)
GB12230 (GB2100)	ZG0Cr18Ni9Ti	0.80	1.5	0.8~0.20	0.040	0.030	17.0~20	8.0~11.0		0.50~0.70		441	196	25	(32)	(98)
GB12230 (GB2100)	ZG0Cr18Ni9Ti	0.102	1.5	0.8~0.20	0.045	0.030	17.0~20	8.0~11.0		0.50~0.70		441	196	25	(32)	(98)
GB12230 (GB2100)	ZG0Cr18Ni12Ni2Ti	0.8	1.5	0.8~0.20	0.040	0.030	16.0~19	11.0~13	2.00~3.0	0.50~0.70		490	216	30	(30)	(98)
GB12230 (GB2100)	ZG1Cr18Ni12Ni2Ti	0.12	1.5	1.50	0.045	0.030	16.0~19	11.0~13	3.00~4.0	0.50~0.70		490	216	30	(30)	(98)
GB12230	CF3	0.03	2.00	1.50	0.04	0.04	17.0~21	8.0~11.0				485	206	35	-	
GB12230	CF8	0.08	2.00	1.50	0.04	0.04	18.0~21	8.0~11.0				485	206	35	-	
GB12230	CF3M	0.03	1.5	1.50	0.04	0.04	17.0~21	9.0~12.0	2.00~3.0			485	206	30	-	
GB12230	CF8M	0.08	1.50	1.50	0.04	0.04	18.0~21	9.0~12.0	3.00~4.0			485	206	30	-	
GB12230	CF8C	0.08	2.00	1.50	0.04	0.04	18.0~21	9.0~12.0			(Nb) 8xC% ~1.0	485	206	30		AKV J(mm)/ °C
JB/T7248	LCB	030	0.60	1.00	0.04	0.045						450~620	240	24	35	14/-46
JB/T7248	LC1	0.25	0.60	0.5~0.80	0.04	0.045			0.45~0.65			450~620	240	24	35	14/-59
JB/T7248	LC2	0.25	0.60	0.5~0.80	0.04	0.045		2.00~3.0				435~655	275	24	35	16/-73
JB/T7248	LC3	0.15	0.60	0.5~0.80	0.04	0.045		3.00~4.0				435~655	275	24	35	16/-101

Note:100% of total maximum value of impurity (residue)element.

CHEMICAL COMPOSITION AND MECHANICAL PROPERTIES OF COMMONLY USED STEEL CASTINGS (STEEL PARTS)

Standard number	Trademark	Chemical composition										Mechanical property				
		C≥	Si≥	Mn≥	P≥	S≥	Cr	Ni	Mo	V	Cu	Ob Mpa	Os Mpa	δ%	ψ%	AK/J
GB12223	WCB	0.30	0.60	1.00	0.04	0.045						485	350	22	35	
GB12229	WCC	0.25	0.60	1.2	0.04	0.045						485	275	22	35	
ZBJC8015	ZG1Cr5Mo	0.15	0.50	0.60	0.035	0.030	4.0~ 6.0		0.50~ 0.65			590	390	18	-	
ZBJC8015	ZG20CrMoV	0.18~ 0.24	0.17~ 0.37	0.4~ 0.70	0.030	0.030	0.9~ 1.2		0.50~ 0.70		2.00~ 3.0	500	320	14	30	30
ZBJC8015	ZG15Cr1Mo1V	0.14~ 0.20	0.17~ 0.30	0.4~ 0.70	0.030	0.030	1.20~ 1.7		1.00~ 1.2		3.00~ 4.0	500	350	14	30	30
GB/T5263	WC1	0.25	0.60	0.5~ 0.80	0.40	0.045			0.45~ 0.65			450	240	24	35	
GB/T5263	WC5	0.20	0.60	0.4~ 0.70	0.040	0.045	0.50~ 0.9	0.06~ 1.0	0.90~ 1.2			483	276	20	35	
GB/T5263	WC6	0.20	0.60	0.5~ 0.80	0.040	0.045	1.0~ 1.50		0.45~ 0.65			483	276	20	35	
GB/T5263	WC9	0.18	0.60	0.4~ 0.70	0.040	0.045	2.0~ 2.75		0.90~ 1.20			483	276	20	35	
GB12230 (GB2100)	ZG00Cr18Ni10	0.03	1.5	0.8~ 0.20	0.040	0.030	17.0~ 20	8.0~ 11.0				392	177	25	(32)	(98)
GB12230 (GB2100)	ZG0Cr18Ni9	0.08	1.5	0.8~ 0.20	0.040	0.030	17.0~ 20	8.0~ 11.0				441	196	25	(32)	(98)
GB12230 (GB2100)	ZG1Cr18Ni9	0.12	1.5	0.8~ 0.20	0.045	0.030	17.0~ 20	8.0~ 11.0				441	196	25	(32)	(98)
GB12230 (GB2100)	ZG0Cr18Ni9Ti	0.80	1.5	0.8~ 0.20	0.040	0.030	17.0~ 20	8.0~ 11.0		0.50~ 0.70		441	196	25	(32)	(98)
GB12230 (GB2100)	ZG0Cr18Ni9Ti	0.102	1.5	0.8~ 0.20	0.045	0.030	17.0~ 20	8.0~ 11.0		0.50~ 0.70		441	196	25	(32)	(98)
GB12230 (GB2100)	ZG0Cr18Ni12Ni2Ti	0.8	1.5	0.8~ 0.20	0.040	0.030	16.0~ 19	11.0~ 13	2.00~ 3.0	0.50~ 0.70		490	216	30	(30)	(98)
GB12230 (GB2100)	ZG1Cr18Ni12Ni2Ti	0.12	1.5	1.50	0.045	0.030	16.0~ 19	11.0~ 13	3.00~ 4.0	0.50~ 0.70		490	216	30	(30)	(98)
GB12230	CF3	0.03	2.00	1.50	0.04	0.04	17.0~ 21	8.0~ 11.0				485	206	35	-	
GB12230	CF8	0.08	2.00	1.50	0.04	0.04	18.0~ 21	8.0~ 11.0				485	206	35	-	
GB12230	CF3M	0.03	1.5	1.50	0.04	0.04	17.0~ 21	9.0~ 12.0	2.00~ 3.0			485	206	30	-	
GB12230	CF8M	0.08	1.50	1.50	0.04	0.04	18.0~ 21	9.0~ 12.0	3.00~ 4.0			485	206	30	-	
GB12230	CF8C	0.08	2.00	1.50	0.04	0.04	18.0~ 21	9.0~ 12.0			(Nb) 8xC% ~1.0	485	206	30		AKV J/(mm)/ °C
JB/T7248	LCB	0.30	0.60	1.00	0.04	0.045						450~ 620	240	24	35	14/- 46
JB/T7248	LC1	0.25	0.60	0.5~ 0.80	0.04	0.045			0.45~ 0.65			450~ 620	240	24	35	14/- 59
JB/T7248	LC2	0.25	0.60	0.5~ 0.80	0.04	0.045		2.00~ 3.0				435~ 655	275	24	35	16/- 73
JB/T7248	LC3	0.15	0.60	0.5~ 0.80	0.04	0.045		3.00~ 4.0				435~ 655	275	24	35	16/- 101

Note:100% of total maximum value of impurity (residue)element.

09 CHINESE AND FOREIGN MAIN AUSTENITIC STAINLESS STEEL COMPARISON TABLE

NO.	China		Japan	America		Republic of Korea	BSEN	Indian IS	AS	CNS
	Old license plate	New license plate (07.10)		ASTM	UNS					
1	1Cr17Mn6Ni5N	12Cr17Mn6Ni5N	SUS201	201	S20100	STS201	1.4372	10Cr17Mn6Ni4N ²⁰	201-2	201
2	1Cr18Mn8Ni5N	12Cr18Mn9Ni5N	SUS202	202	S20200	STS202	1.4373	-	-	202
3	1Cr17Ni17	12Cr17Ni7	SUS3014	301	S30100	STS301	1.4319	10Cr17Ni7	301	301
4	0Cr18Ni9	06Cr19Ni10	SUS304	304	S30400	STS304	1.4301	07Cr18Ni9	304	304
5	00Cr19Ni10	022Cr19Ni10	SUS304L	304L	S30403	STS304L	1.4306	02Cr18Ni11	304L	304L
6	0Cr19Ni9N	06Cr19Ni10N	SUS304N1	304N	S30451	STS304N1	1.4315	-	304N1	304N1
7	0Cr19Ni10NbN	06Cr19Ni9NbN	SUS304N2	XM21	S30452	STS304N2	-	-	304N2	304N2
8	00Cr18Ni10N	022Cr19Ni10N	SUS304LN	304LN	S30453	STS304LN	-	-	304LN	304LN
9	1Cr18Ni12	10Cr18Ni12	SUS305	305	S30500	STS305	1.4303	-	305	305
10	0Cr23Ni13	06Cr23Ni13	SUS309S	309S	S30908	STS309S	1.4833	-	309S	309S
11	0Cr25Ni20	06Cr25Ni20	SUS310S	310S	S31008	STS310S	1.4845	-	310S	310S
12	0Cr17Ni12Mo2	06Cr17Ni12Mo2	SUS316	316	S31600	STS316	1.4401	04Cr17Ni12Mo2	316	316
13	0Cr18Ni12Mo3Ti	06Cr17Ni12Mo2Ti	SUS316Ti	316Ti	S31635	-	1.4571	04Cr17Ni12MoTi ²⁰	316Ti	316Ti
14	00Cr17Ni14Mo2	022Cr17Ni12Mo2	SUS316L	316L	S31603	STS316L	1.4404	~02Cr17Ni12Mo2	316L	316L
15	0Cr17Ni12Mo2N	06Cr17Ni12Mo2N	SUS316N	316N	S31651	STS316N	-	-	316N	316N
16	00Cr17Ni13Mo2N	022Cr17Ni13Mo2N	SUS316LN	316LN	S31653	STS316LN	1.4429	-	-	316LN
17	0Cr18Ni14Mo2Cu2	06Cr18Ni12Mo2Cu2	SUS316J1	-	-	STS316J1	-	-	316J1	316J1
18	00Cr18Ni14Mo2Cu2	022Cr18Ni14Mo2Cu2	SUS316J1L	-	-	STS316J1L	-	-	316J1L	316J1L
19	0Cr19Ni13Mo3	06Cr19Ni13Mo3	SUS317	317	S31700	STS317	-	-	317	317
20	00Cr19Ni13Mo3	022Cr19Ni13Mo3	SUS317L	317L	S31703	STS317L	1.4438	-	317L	317L
21	0Cr18Ni10Ti	06Cr18Ni11Ti	SUS321	321	S32100	STS321	1.4541	04Cr18Ni10Ti ²⁰	321	321
22	0Cr18Ni11Nb	06Cr18Ni11Nb	SUS347	347	S34700	STS347	1.455	04Cr18Ni10Nb ⁴⁰	347	347
23	0Cr26Ni5Mo2	-	SUS329J1	329	S32900	STS329J1	1.4477	-	329J1	329J1
24	00Cr18Ni5Mo3Si2	022Cr19Ni5Mo3Si2N	SUS329J3L	-	S31803	STS329J3L	1.4462	-	329J3L	329J3L
25	0Cr13Al	06Cr13Al	SUS405	405	S40500	STS405	1.4002	04Cr13	405	405
26	-	022Cr11Ti	SUH409	409	S40900	STS409	1.4512	-	409L	409L
27	00Cr12	022Cr12	SUS410L	-	-	STS410L	-	-	410L	410L
28	1Cr17	10Cr17	SUS430	430	S43000	STS430	1.4016	05Cr17	430	430
29	1Cr17Mo	10Cr17Mo	SUS434	434	S43400	STS434	1.4113	-	434	434
30	-	022Cr18NbTi	-	-	S43940	-	1.4509	-	439	439
31	00Cr18Mo2	019Cr19Mo2NbTi	SUS444	444	S44400	STS444	1.4521	-	444	444
32	1Cr12	12Cr12	SUS403	403	S40300	STS403	-	-	403	403
33	1Cr13	12Cr13	SUS410	410	S41000	STS410	1.4006	12Cr13	410	410
34	2Cr13	20Cr13	SUS420J1	420	S42000	STS420J1	1.4021	20Cr13	420	420J1
35	3Cr13	30Cr13	SUS420J2	-	-	STS420J2	1.4028	30Cr13	420J2	420J2
36	7Cr17	68Cr17	SUS440A	440A	S44002	STS440A	-	-	440A	440A