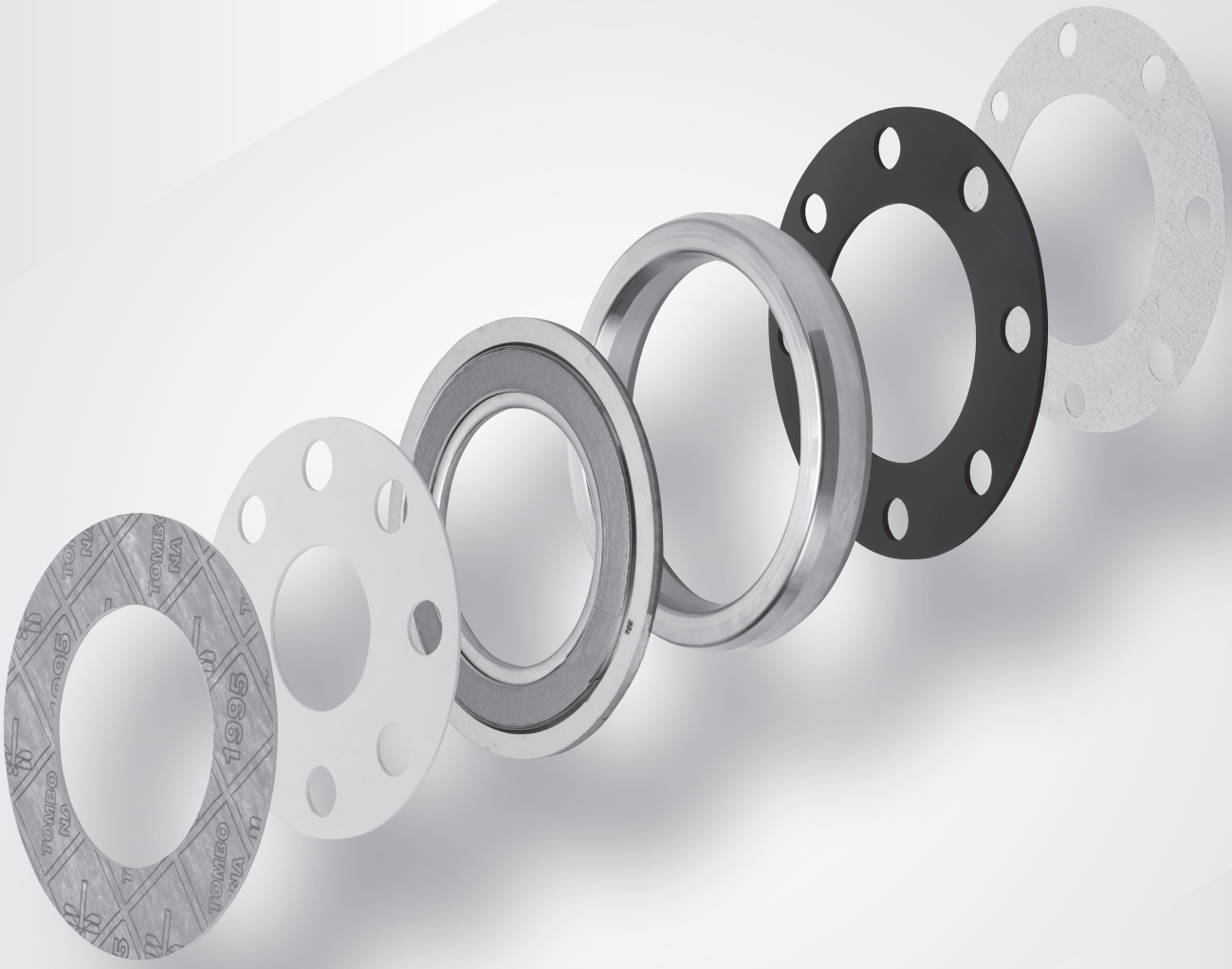
TOMBO™ BRAND

Mar. 2023

GASKETS Dimension tables



NICHIAS

TOMBO™ BRAND
GASKETS

TOMBO BRAND GASKETS

Dimension Tables

Notes on the dimension table

The dimensions listed in this table may not necessarily comply with the latest standards.

Safety precautions

Please observe the following items in order to maintain the original functions of the gaskets in this catalog and use them safely.

⚠ Common precautions for handling the products listed in this catalog

The physical characteristics, application selection, range of use, etc. described in this catalog are typical. In addition, the performance data is based on our test results and achievements in general applications. Since this product is used in various places and equipment and the actual usage conditions are also different, it is recommended to carry out a confirmation test under the actual conditions when using it. For individual applications, it is necessary to judge the selection after evaluating individual design and compatibility. Please contact us for special applications.

- Do not use for any purpose other than those listed in the catalog.
- Use products within the service temperature range specified in the catalog.
- When processing, use sharp cutting tools.
- Always follow the instructions in the instruction manual when installing equipment, etc.
- Do not reuse the gaskets.
- When replacing, carefully remove all of the old material before installing the new product.
- Store products indoor at ordinary temperature and humidity, and strictly avoid to get wet.
- Check the precautions for occupational health using the SDS.
- For disposal, follow local regulations.

Precautions for handling GRASEAL® Gasket

Since there is high risk of causing deformation and/or scratch damage on this product, pay enough attention to the following handling precautions.
If deformation and/or scratch damage is caused on the surface of the product, original performance may not be maintained.

- Do not place heavy items on the product.
- Do not hit GRASEAL® product on a hard item.
- Do not step on the product nor bend the product.
- When a cutter knife, etc. is used to open a package, be careful not to damage the product.
- Do not pick up the product before completely opening the package.
- Wear the protection glove in order not to be hurt, when reinforcing metal sheet is exposed on the edge.

Precautions for handling Manhole Gasket

- Wear the protection glove in order not to be hurt, when reinforcing metal sheet is exposed on the edge.

Precautions for handling Jointing Sheet

- The surface sometimes becomes white, but this has no effect on performance.
- Recommended gasket paste TOMBO No.9105, 9106, or 9400. Please consult us when using any other paste.

Precautions for handling fluoropolymer gaskets

⚠ DANGER

- ⊘ Never allow the product to come into direct contact with body tissues or fluids.
- ⊘ Never administer (including by mistake) to humans.

- In cases when using or processing the product at above the maximum service temperature, fluorinated gas will be generated. The room must be adequately ventilated so as to prevent inhalation of gas.

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Sheet Gaskets

Applicable gaskets

- Jointing sheet gaskets
- Fluoropolymer gaskets
- GRASEAL™ gaskets
- Rubber cut gaskets (TOMBO™ No.1050 series)
- Rubber cut gaskets with cloth (TOMBO™ No.1051 series)

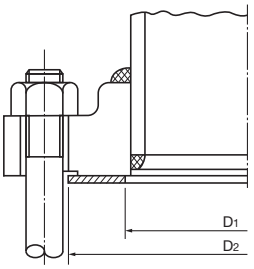
Flat ring gasket for raised face flange

Applicable standards

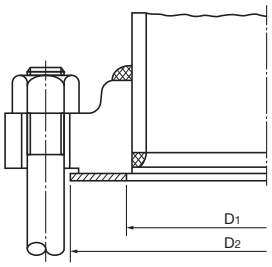
JIS B 2404-2018 "Dimensions of gaskets for use with pipe flanges"
(Old) JIS B 2238-1996 "General rules for steel pipe flanges"

Applicable flanges

JIS B 2220-2012 "Steel pipe flange"
JIS B 2239-2013 "Cast iron pipe flange"
JIS B 2240-2006 "Copper alloy pipe flange"
JIS B 2241-2006 "Aluminum alloy pipe flange"
(Old) JIS B 2238-1996 "General rules for steel pipe flanges"



For flat face soat flange



For large raised face flange

Dimension Table 1

(Unit: mm)

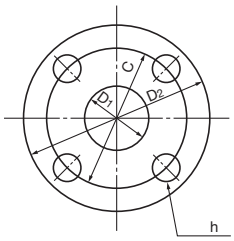
Nominal flange diameter		Gasket I.D D_1	For flat face, large raised face and small raised face flanges								
			Gasket O.D D_2								
A	B		Nominal pressure 2K	Nominal pressure 5K	Nominal pressure 10K	Thin flange nominal pressure 10K	Nominal pressure 16K	Nominal pressure 20K	Nominal pressure 30K	Nominal pressure 40K	Nominal pressure 63K
10	3/8	18	—	45	53	55	53	53	59	59	64
15	1/2	22	—	50	58	60	58	58	64	64	69
20	3/4	28	—	55	63	65	63	63	69	69	75
25	1	35	—	65	74	78	74	74	79	79	80
32	1 1/4	43	—	78	84	88	84	84	89	89	90
40	1 1/2	49	—	83	89	93	89	89	100	100	108
50	2	61	—	93	104	108	104	104	114	114	125
65	2 1/2	84 (77)	—	118	124	128	124	124	140	140	153
80	3	90	—	129	134	138	140	140	150	150	163
90	3 1/2	102	—	139	144	148	150	150	163	163	181
100	4	115	—	149	159	163	165	165	173	183	196
125	5	141	—	184	190	194	203	203	208	226	235
150	6	167	—	214	220	224	238	238	251	265	275
175	7	192	—	240	245	249	—	—	—	—	—
200	8	218	—	260	270	274	283	283	296	315	330
225	9	244	—	285	290	294	—	—	—	—	—
250	10	270	—	325	333	335	356	356	360	380	394
300	12	321	—	370	378	380	406	406	420	434	449
350	14	359	—	413	423	425	450	450	465	479	488
400	16	410	—	473	486	488	510	510	524	534	548
450	18	460	535	533	541	—	575	575	—	—	—
500	20	513	585	583	596	—	630	630	—	—	—
550	22	564	643	641	650	—	684	684	—	—	—
600	24	615	693	691	700	—	734	734	—	—	—
650	26	667	748	746	750	—	784	805	—	—	—
700	28	718	798	796	810	—	836	855	—	—	—
750	30	770	856	850	870	—	896	918	—	—	—
800	32	820	906	900	920	—	945	978	—	—	—
850	34	872	956	950	970	—	995	1038	—	—	—
900	36	923	1006	1000	1020	—	1045	1088	—	—	—
1000	40	1025	1106	1100	1124	—	1158	—	—	—	—
1100	44	1130	1216	1210	1234	—	1258	—	—	—	—
1200	48	1230	1326	1320	1344	—	1368	—	—	—	—
1300	52	1335	—	—	—	—	1474	—	—	—	—
1350	54	1385	1481	1475	1498	—	1534	—	—	—	—
1400	56	1435	—	—	—	—	1584	—	—	—	—
1500	60	1540	1636	1630	1658	—	1694	—	—	—	—

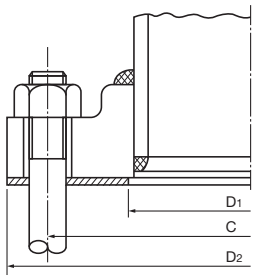
* Dimensions in parentheses and nominal pressures of 2K, 40K, and 63K are the same as (old) JIS B 2238-1996 "General Rules for Steel Pipe Flanges" Reference 3 Table 2.
* Jointing sheet gaskets, fluoropolymers gaskets, and GRASEAL gaskets for nominal pressures of 2K and 5K flanges are not recommended as it may not provide sufficient tightening force. Rubber cut and rubber cut gaskets with cloth are recommended.
* As a general rule, we do not recommend sheet gaskets for nominal pressures of 30K or higher. Semi-metallic gaskets are recommended.

Full-face gasket for flat face flange

Applicable standards
JIS B 2404-2018 "Dimensions of gaskets for use with pipe flanges"
(Old) JIS B 2238-1996 "General rules for steel pipe flanges"

Applicable flanges
JIS B 2220-2012 "Steel pipe flange"
JIS B 2239-2013 "Cast iron pipe flange"
JIS B 2240-2006 "Copper alloy pipe flange"
JIS B 2241-2006 "Aluminum alloy pipe flange"
(Old) JIS B 2238-1996 "General rules for steel pipe flanges"





Dimension Table 2

(Unit: mm)

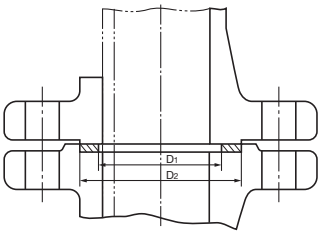
Nominal flange diameter		Gasket I.D D_1	Nominal pressure 2K			5K			10K			16K		
A	B		Gasket O.D D_2	Pitch circle diameter, C	n x h	Gasket O.D D_2	Pitch circle diameter, C	n x h	Gasket O.D D_2	Pitch circle diameter, C	n x h	Gasket O.D D_2	Pitch circle diameter, C	n x h
10	3/8	18	—	—	—	75	55	4×12	90	65	4×15	90	65	4×15
15	1/2	22	—	—	—	80	60	4×12	95	70	4×15	95	70	4×15
20	3/4	28	—	—	—	85	65	4×12	100	75	4×15	100	75	4×15
25	1	35	—	—	—	95	75	4×12	125	90	4×19	125	90	4×19
32	1 1/4	43	—	—	—	115	90	4×15	135	100	4×19	135	100	4×19
40	1 1/2	49	—	—	—	120	95	4×15	140	105	4×19	140	105	4×19
50	2	61	—	—	—	130	105	4×15	155	120	4×19	155	120	8×19
65	2 1/2	84 (77)	—	—	—	155	130	4×15	175	140	4×19	175	140	8×19
80	3	90	—	—	—	180	145	4×19	185	150	8×19	200	160	8×23
90	3 1/2	102	—	—	—	190	155	4×19	195	160	8×19	210	170	8×23
100	4	115	—	—	—	200	165	8×19	210	175	8×19	225	185	8×23
125	5	141	—	—	—	235	200	8×19	250	210	8×23	270	225	8×25
150	6	167	—	—	—	265	230	8×19	280	240	8×23	305	260	12×25
175	7	192	—	—	—	300	260	8×23	305	265	12×23	—	—	—
200	8	218	—	—	—	320	280	8×23	330	290	12×23	350	305	12×25
225	9	244	—	—	—	345	305	12×23	350	310	12×23	—	—	—
250	10	270	—	—	—	385	345	12×23	400	355	12×25	430	380	12×27
300	12	321	—	—	—	430	390	12×23	445	400	16×25	480	430	16×27
350	14	359	—	—	—	480	435	12×25	490	445	16×25	540	480	16×33
400	16	410	—	—	—	540	495	16×25	560	510	16×27	605	540	16×33
450	18	460	605	555	16×23	605	555	16×25	620	565	20×27	675	605	20×33
500	20	513	655	605	20×23	655	605	20×25	675	620	20×27	730	660	20×33
550	22	564	720	665	20×25	720	665	20×27	745	680	20×33	795	720	20×39
600	24	615	770	715	20×25	770	715	20×27	795	730	24×33	845	770	24×39
650	26	667	825	770	24×25	825	770	24×27	845	780	24×33	—	—	—
700	28	718	875	820	24×25	875	820	24×27	905	840	24×33	—	—	—
750	30	770	945	880	24×27	945	880	24×33	970	900	24×33	—	—	—
800	32	820	995	930	24×27	995	930	24×33	1020	950	28×33	—	—	—
850	34	872	1045	980	24×27	1045	980	24×33	1070	1000	28×33	—	—	—
900	36	923	1095	1030	24×27	1095	1030	24×33	1120	1050	28×33	—	—	—
1000	40	1025	1195	1130	28×27	1195	1130	28×33	1235	1160	28×39	—	—	—
1100	44	1130	1305	1240	28×27	1305	1240	28×33	1345	1270	28×39	—	—	—
1200	48	1230	1420	1350	32×27	1420	1350	32×33	1465	1380	32×39	—	—	—
1350	54	1385	1575	1505	32×27	1575	1505	32×33	1630	1540	36×45	—	—	—
1500	60	1540	1730	1660	36×27	1730	1660	36×33	1795	1700	40×45	—	—	—

* The dimensions in parentheses and the nominal pressure of 2K are the same as in Table 6 of (Old) JIS B 2404-1999 "Dimensions of Gasket for use with Pipe Flanges".
* Jointing sheet gaskets, fluoropolymers gaskets, and GRASEAL gaskets for nominal pressures of 2K and 5K flanges are not recommended as it may not provide sufficient tightening force. Rubber cut and rubber cut gaskets with cloth are recommended. Gas sealing is difficult even at nominal pressures of 10K and 16K.

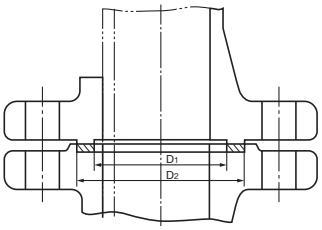
For M&F and T&G flanges

Applicable standards
JIS B 2404-2018 "Dimensions of gaskets for use with pipe flanges"

Applicable flanges
JIS B 2220-2012 "Steel pipe flange"
(Old) JIS B 2238-1996 "General rules for steel pipe flanges"



Male & female type



Tongue & groove type

Dimension Table 3

(Unit: mm)

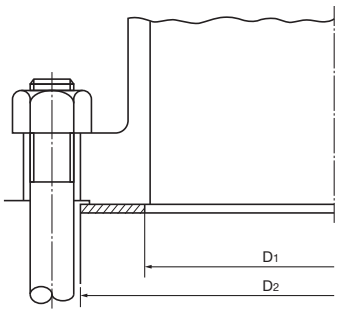
Nominal flange diameter		M&F type		T&G type	
A	B	Gasket I.D D_1	Gasket O.D D_2	Gasket I.D D_1	Gasket O.D D_2
10	3/8	18	38	28	38
15	1/2	22	42	32	42
20	3/4	28	50	38	50
25	1	35	60	45	60
32	1 1/4	43	70	55	70
40	1 1/2	49	75	60	75
50	2	61	90	70	90
65	2 1/2	77	110	90	110
80	3	90	120	100	120
90	3 1/2	102	130	110	130
100	4	115	145	125	145
125	5	141	175	150	175
150	6	167	215 (212)	190 (187)	215 (212)
200	8	218	260	230	260
250	10	270	325	295	325
300	12	321	375 (370)	340	375 (370)
350	14	359	415	380	415
400	16	410	475	440	475
450	18	460	523	483	523
500	20	513	575	535	575
550	22	564	625	585	625
600	24	615	675	635	675
650	26	667	727	682	727
700	28	718	777	732	777
750	30	770	832	787	832
800	32	820	882	837	882
850	34	872	934	889	934
900	36	923	987	937	987
1000	40	1025	1092	1042	1092
1100	44	1130	1192	1142	1192
1200	48	1230	1292	1237	1292
1300	52	1335	1392	1337	1392
1350	54	1385	1442	1387	1442
1400	56	1435	1492	1437	1492
1500	60	1540	1592	1537	1592

* Dimensions in parentheses apply only to flanges with a nominal pressure of 10K.

Gasket for safety valve (JIS B 8210-2017 version)

Applicable standard
This dimension table is set by NICHIAS based on JIS B 8210-2017.

Applicable flange
JIS B 8210-2017 "Safety devices for protection against excessive pressure - Safety valves"



Dimension Table 4

(Unit: mm)

Nominal flange diameter		Full-volume safety valve					
		10K		16K		20K	
A	B	Gasket I.D D_1	Gasket O.D D_2	Gasket I.D D_1	Gasket O.D D_2	Gasket I.D D_1	Gasket O.D D_2
20	3/4	43	74	43	74	47	79
25	1	52	84	52	84	57	89
32	1 1/4	59	89	59	89	65	100
40	1 1/2	63	104	63	104	77	114
50	2	85	124	85	124	104	144
65	2 1/2	99	140	99	140	107	150
80	3	112	150	112	150	117	163
90	3 1/2	127	165	127	165	127	173
100	4	162	203	162	203	162	208
125	5	195	238	195	238	195	251
150	6	240	283	240	283	240	296
200	8	313	356	313	356	305	360

Information

The safety valve is a valve that operates when the pressure exceeds the set pressure and prevents the internal pressure of equipment and piping from rising. There are two types of safety valves, the lift type and the full bore type which are defined as follows in JIS B 8210-2017.

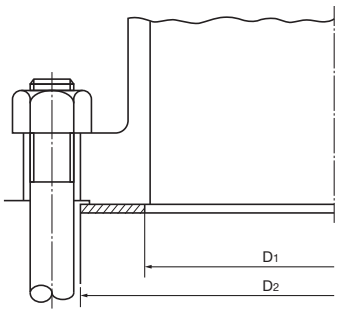
Lift type: Safety valve of which is 1/40 or over to under 1/4 the seat diameter and the seat flow area (curtain area) becomes the minimum among the flow areas when the valve disc is opened. (image of releasing internal fluid little by little)

Full bore type: Safety valve which is capable of obtaining such a lift where the seat flow becomes sufficiently larger than the area of the throat of the nozzle.(image of releasing internal fluid at once)

Gasket for safety valve (JIS B 8210-1986 version)

Applicable standard
This dimension table is set by NICHIAS based on JIS B 8210-1986.

Applicable flange
JIS B 8210-1986 "Safety devices for protection against excessive pressure - Safety valves"



Dimension Table 5

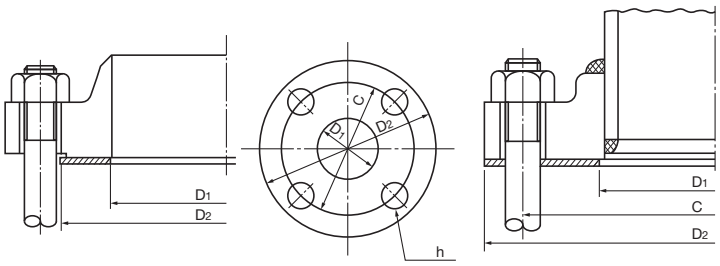
(Unit: mm)

Nominal flange diameter		Lift type safety valve				Full bore type safety valve			
		10K		20K		10K		20K	
A	B	Gasket I.D D_1	Gasket O.D D_2	Gasket I.D D_1	Gasket O.D D_2	Gasket I.D D_1	Gasket O.D D_2	Gasket I.D D_1	Gasket O.D D_2
20	3/4	41	63	45	74	45	74	45	79
25	1	53	74	50	79	50	79	50	84
32	1 1/4	63	84	64	89	64	89	58	100
40	1 1/2	68	89	67	104	67	104	65	114
50	2	83	104	77	114	77	114	75	125
65	2 1/2	106	124	102	140	102	140	101	150
80	3	118	144	112	150	112	150	110	163
90	3 1/2	133	159	127	165	127	165	120	173
100	4	156	179	152	185	152	185	150	198
115	4 1/2	159	190	162	203	162	203	162	208
125	5	169	200	167	213	167	213	167	223
150	6	208	245	212	258	212	258	217	276
200	8	259	290	265	311	265	311	254	320

Gasket for deformed pipe

Applicable standard
This dimension table is set by NICHIAS based on JIS G 5527-2014.

Applicable flange
JIS G 3443-2-2014 "Coated steel pipes for water service – Part 2: Fittings"
JIS G 5527-2014 "Ductile iron fittings"



Dimension Table 6

(Unit: mm)

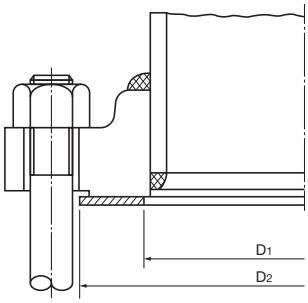
Nominal flange diameter (D)	JIS G 3443-2 F12, JIS G 5527 7.5K					
	FR shape gasket		FF shape gasket			
	Gasket I.D D_1	Gasket O.D D_2	Gasket I.D D_1	Gasket O.D D_2	Pitch circle diameter C	n x h
80 Note 1	85	152	85	211	168	4×19
100	110	179	110	238	195	4×19
125	135	204	135	263	220	6×19
150	160	231	160	290	247	6×19
200	210	283	210	342	299	8×19
250	260	340	260	410	360	8×23
300	310	394	310	464	414	10×23
350	360	450	360	530	472	10×25
400	410	502	410	582	524	12×25
450	460	561	460	652	585	12×27
500	510	615	510	706	639	12×27
600	610	719	610	810	743	16×27
700	710	824	710	928	854	16×33
800	810	930	810	1034	960	20×33
900	910	1043	910	1156	1073	20×33
1000	1010	1149	1010	1262	1179	24×33
1100	1110	1253	1110	1366	1283	24×33
1200	1210	1357	1210	1470	1387	28×33
1350	1360	1516	1360	1642	1552	28×39
1500	1510	1674	1510	1800	1710	32×39
1600	1610	1784	1610	1915	1820	36×39
1650	1660	1834	1660	1965	1870	40×39
1800	1810	1984	1810	2115	2020	44×39
2000	2015	2188	2015	2325	2230	48×46
2100	2115	2293	2115	2430	2335	48×46
2200	2225	2398	2225	2550	2440	52×46
2300	2315	2503	2315	2640	2545	52×46
2400	2415	2608	2415	2760	2650	56×46
2500	2515	2707	2515	2855	2755	56×52
2600	2630	2802	2630	2960	2850	56×52
2700	2715	2922	2715	3080	2970	60×52
2800	2820	3022	2820	3180	3070	60×52
3000	3020	3242	3020	3405	3290	64×52

Note 1: It is [75] in JIS G 5527-1998.

Flat ring type (for raised face) Group I, Group II

Applicable standard
JPI-7S-16-2020 "Dimensions of non-metallic gaskets for pipes"
* Group I dimensions are the same as ASME B16.21-2016 dimensions.

Applicable flange
JPI-7S-15-2011 "Flanges for the Petroleum Industry"
ASME B16.5-2017 "Steel pipe flange"



Dimension Table 7

(Unit: mm)

Nominal flange diameter		For raised face flange Group I				For raised face flange Group II			
		Class 150		Class 300		Class 150		Class 300	
A	B	Gasket I.D D_1	Gasket O.D D_2	Gasket I.D D_1	Gasket O.D D_2	Gasket I.D D_1	Gasket O.D D_2	Gasket I.D D_1	Gasket O.D D_2
15	1/2	22	47	22	53	25	47	25	53
20	3/4	28	56	28	66	33	56	33	66
25	1	35	66	35	72	38	66	38	72
(32)	(1 1/4)	44	75	44	82	48	75	48	82
40	1 1/2	49	85	49	94	54	85	54	94
50	2	61	104	61	110	73	104	73	110
65	2 1/2	77	123	77	129	86	123	86	129
80	3	90	135	90	148	108	135	108	148
(90)	(3 1/2)	103	161	103	164	121	161	121	164
100	4	116	173	116	180	132	173	132	180
(125)	(5)	143	196	143	215	160	196	160	215
150	6	169	221	169	249	191	221	191	249
200	8	220	277	220	306	238	277	238	306
250	10	275	338	275	360	287	338	287	360
300	12	326	408	326	420	344	408	344	420
350	14	358	449	358	484	376	449	376	484
400	16	408	512	408	538	427	512	427	538
450	18	459	547	459	595	490	547	490	595
500	20	510	604	510	651	535	604	535	651
(550)	22	561	657	561	702	—	—	—	—
600	24	612	715	612	772	643	715	643	772

* Dimensions in parentheses ( ) apply to the old standard flange dimensions of JPI-7S-43-72.
* It is desirable to use Group II dimensions for the gas seal.
* The flange nominal diameter in ( ) should not be used as much as possible.

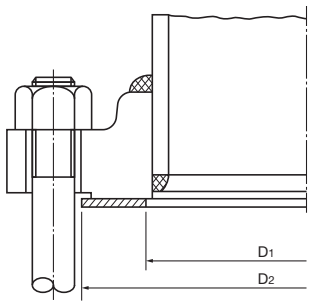
Information

In JPI-7S-16-2014, gasket dimensions are divided into two groups according to contact width. Group I is the standard and Group II should be applied by considering to the allowable seating stress of the gasket when you want to secure a particularly high gasket seating stress.

Flat ring type (for raised face) Group I large diameter series A

Applicable standard
JPI-7S-16-2020 "Dimensions of non-metallic gaskets for pipes"

Applicable flange
JPI-7S-43-2008 "Large Bore Flange for the Petroleum Industry" (Series A)
ASME B16.47-2017 "Large Diameter Steel Flanges" (Series A)
MSS-SP-44-2016 "Steel Pipe line Flanges"



Dimension Table 8

(Unit: mm)

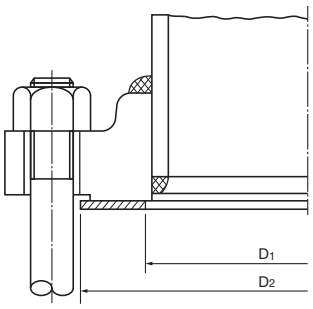
Nominal flange diameter		For raised face flange			
		Class 150		Class 300	
A	B	Gasket I.D D_1	Gasket O.D D_2	Gasket I.D D_1	Gasket O.D D_2
650	26	663	772	663	832
700	28	714	829	714	896
750	30	765	880	765	950
800	32	816	937	816	1003
850	34	867	988	867	1054
900	36	917	1045	917	1115
950	38	968	1108	968	1051
1000	40	1019	1159	1019	1111
1050	42	1070	1216	1070	1162
1100	44	1121	1273	1121	1216
1150	46	1171	1324	1171	1270
1200	48	1222	1381	1222	1321
(1250)	(50)	1273	1432	1273	1375
(1300)	(52)	1324	1489	1324	1426
1350	54	1375	1546	1375	1489
(1400)	(56)	1425	1602	1425	1540
(1450)	(58)	1476	1659	1476	1591
1500	60	1527	1710	1527	1640

* The flange nominal diameter in ( ) should not be used as much as possible.

Flat ring type (for raised face) Group I large diameter series B

Applicable standard
JPI-7S-16-2020 "Dimensions of non-metallic gaskets for pipes"

Applicable flange
JPI-7S-43-2008 "Large Bore Flange for the Petroleum Industry" (Series B)
ASME B16.47-2017 "Large Diameter Steel Flanges" (Series B)
API Std 605-1980



Dimension Table 9

(Unit: mm)

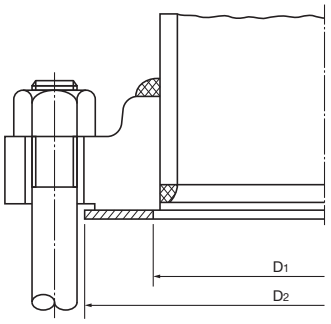
Nominal flange diameter		For raised face flange					
		Class 75		Class 150		Class 300	
A	B	Gasket I.D D_1	Gasket O.D D_2	Gasket I.D D_1	Gasket O.D D_2	Gasket I.D D_1	Gasket O.D D_2
650	26	663	705	663	722	663	769
700	28	714	756	714	773	714	822
750	30	765	807	765	824	765	883
800	32	816	857	816	878	816	937
850	34	867	908	867	932	867	991
900	36	917	970	917	984	917	1045
950	38	968	1021	968	1042 [1035]	968	1096
1000	40	1019	1072	1019	1092	1019	1146
1050	42	1070	1123	1070	1143	1070	1197
1100	44	1121	1178 [1173]	1121	1194 [1201]	1121	1248
1150	46	1171	1229	1171	1253	1171	1315
1200	48	1222	1280	1222	1304	1222	1365
(1250)	(50)	1273	1330	1273	1354	1273	1416
(1300)	(52)	1324	1384	1324	1405	1324	1467
1350	54	1375	1435	1375	1461	1375	1527
(1400)	(56)	1425	1492	1425	1511	1425	1591
(1450)	(58)	1476	1543	1476	1577	1476	1651
1500	60	1527	1594	1527	1625	1527	1702

* The flange dimensions in bold border ☐ have been changed in JPI-7S-43-1985. Dimensions in [ ] apply to the old standard flange dimensions of JPI-7S-43-72. Dimensions without [ ] are dimensions that can be used in common with old and new flanges.
* The flange nominal diameter in ( ) should not be used as much as possible.

Flat ring type (for raised face) Group I for slip-on welded flanges (for plug-in welded flanges)

Applicable standard
JPI-7S-16-2020 "Dimensions of non-metallic gaskets for pipes"

Applicable flange
JPI-7S-43-2008 "Large Bore Flange for the Petroleum Industry"
ASME B16.47-2017 "Large Diameter Steel Flanges"
TAYLOR FORGE CATALOG 571



Dimension Table 10

(Unit: mm)

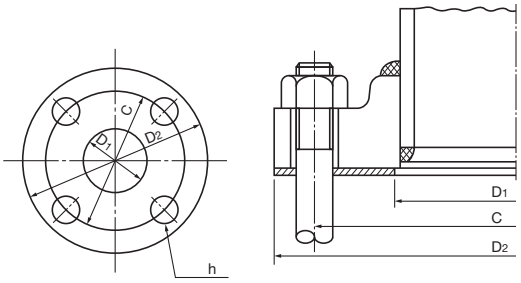
Nominal flange diameter		For large diameter slip-on welded flanges			
		Class 175		Class 350	
A	B	Gasket I.D D_1	Gasket O.D D_2	Gasket I.D D_1	Gasket O.D D_2
650	26	711	737	724	750
700	28	762	788	775	800
750	30	813	845	826	857
800	32	864	896	876	908
850	34	911	949	927	959
900	36	962	1000	984	1023
950	38	1013	1051	1035	1073
1000	40	1064	1102	1080	1124
1050	42	1118	1162	1130	1181
1100	44	1168	1213	1191	1242
1150	46	1219	1264	1241	1292
1200	48	1270	1315	1292	1343
(1250)	(50)	1321	1370	—	—
(1300)	(52)	1372	1423	—	—
1350	54	1422	1473	—	—
1500	60	1575	1624	—	—

* This dimension is the inch dimension of the standard dimension described in TAYLOR FORGE CATALOG 571 converted to millimeters.
* The flange nominal diameter in ( ) should not be used as much as possible.

Full-face gasket (for FF)

Applicable standard
JPI-7S-16-2020 "Dimensions of non-metallic gaskets for pipes"

Applicable flange
JPI-7S-15-2011 "Flange for the Petroleum Industry"
ASME B16.5-2017 "Pipe Flanges and Flanged Fittings"
ASME B16.24-2016 "Cast Copper Alloy Pipe Flanges, Flanged Fittings, and Valves"
MSS-SP-44-2016 "Steel Pipe line Flanges"



Dimension Table 11

(Unit: mm)

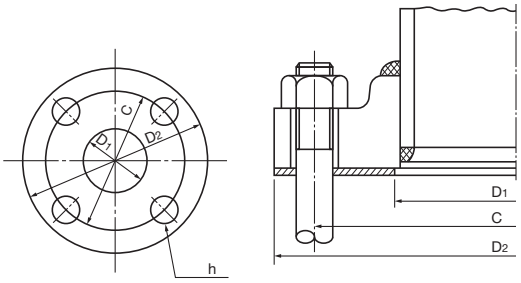
Nominal flange diameter		Gasket I.D D_1	Class 150			Class 300		
A	B		Gasket O.D D_2	Pitch circle diameter C	n x h	Gasket O.D D_2	Pitch circle diameter C	n x h
15	1/2	22	89	60.5	4×16	95	66.5	4×16
20	3/4	28	99	69.8	4×16	117	82.6	4×19
25	1	34	108	79.2	4×16	124	88.9	4×19
(32)	(1 1/4)	44	117	88.9	4×16	133	98.6	4×19
40	1 1/2	49	127	98.6	4×16	155	114.3	4×22
50	2	61	152	120.6	4×19	165	127.0	8×19
65	2 1/2	77	178	139.7	4×19	190	149.4	8×22
80	3	90	190	152.4	4×19	210	168.1	8×22
(90)	(3 1/2)	103	216	177.8	8×19	229	184.2	8×22
100	4	116	229	190.5	8×19	254	200.2	8×22
(125)	(5)	143	254	215.9	8×22	279	235.0	8×22
150	6	168	279	241.3	8×22	318	269.7	12×22
200	8	220	343	298.4	8×22	381	330.2	12×26
250	10	275	406	362.0	12×26	444	387.4	16×29
300	12	326	483	431.8	12×26	520	450.8	16×32
350	14	358	535	476.2	12×29	585	514.4	20×32
400	16	408	595	539.8	16×29	650	571.5	20×35
450	18	459	635	577.8	16×32	710	628.6	24×35
500	20	510	700	635.0	20×32	775	685.8	24×35
550	22	561	749	692.2	20×35	838	743.0	24×42
600	24	612	815	749.3	20×35	915	812.8	24×42

* Gas sealing is difficult when using jointing sheet gaskets, fluoropolymer gaskets, and GRASEAL gaskets as full face type.
* As a general rule, we do not recommend sheet gaskets for nominal pressures exceeding class 300.
* The flange nominal diameter in ( ) should not be used as much as possible.

Full-face gasket (for FF) large-diameter series A

Applicable standard
JPI-7S-16-2020 "Dimensions of non-metallic gaskets for pipes"

Applicable flange
JPI-7S-43-2008 "Large Bore Flange for the Petroleum Industry"
ASME B16.47-2017 "Large Diameter Steel Flanges"
MSS-SP-44-2016 "Steel Pipe line Flanges"



Dimension Table 12

(Unit: mm)

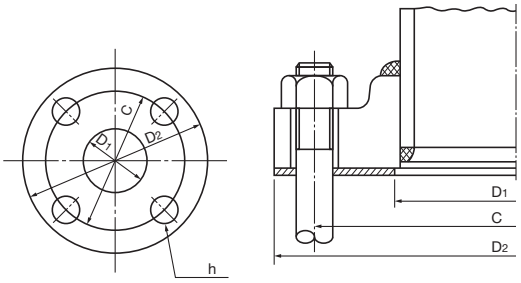
Nominal flange diameter		Gasket I.D D_1	Class 150			Class 300		
A	B		Gasket O.D D_2	Pitch circle diameter C	n x h	Gasket O.D D_2	Pitch circle diameter C	n x h
650	26	663	870	806.4	24×35	970	876.3	28×45
700	28	714	925	863.6	28×35	1035	939.8	28×45
750	30	765	985	914.4	28×35	1090	997.0	28×48
800	32	816	1060	977.9	28×42	1150	1054.1	28×51
850	34	867	1110	1028.7	32×42	1205	1104.9	28×51
900	36	917	1170	1085.8	32×42	1270	1168.4	32×54
950	38	968	1240	1149.4	32×42	1170	1092.2	32×42
1000	40	1019	1290	1200.2	36×42	1240	1155.7	32×45
1050	42	1070	1345	1257.3	36×42	1290	1206.5	32×45
1100	44	1121	1405	1314.4	40×42	1355	1263.6	32×48
1150	46	1171	1455	1365.2	40×42	1415	1320.8	28×51
1200	48	1222	1510	1422.4	44×42	1465	1371.6	32×51
(1250)	(50)	1273	1570	1479.6	44×48	1530	1428.8	32×54
(1300)	(52)	1324	1625	1536.7	44×48	1580	1479.6	32×54
1350	54	1375	1685	1593.8	44×48	1655	1549.4	28×60
(1400)	(56)	1425	1745	1651.0	48×48	1710	1600.2	28×60
(1450)	(58)	1476	1805	1708.2	48×48	1760	1651.0	32×60
1500	60	1527	1855	1759.0	52×48	1810	1701.8	32×60

* Gas sealing is difficult when using jointing sheet gaskets, fluororesin gaskets, and GRASEAL gaskets as full face type.
* As a general rule, we do not recommend sheet gaskets for nominal pressures exceeding class 300.
* The flange nominal diameter in ( ) should not be used as much as possible.

Full-face gasket (for FF) large-diameter series B

Applicable standard
JPI-7S-16-2020 "Dimensions of non-metallic gaskets for pipes"

Applicable flange
JPI-7S-43-2008 "Large Bore Flange for the Petroleum Industry" (Series B)
ASME B16.47-2017 "Large Diameter Steel Flanges" (Series B)
API Std 605-1980



Dimension Table 13

(Unit: mm)

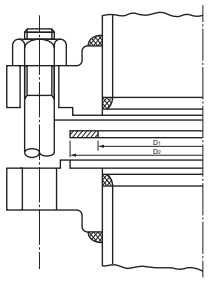
Nominal flange diameter		Gasket I.D D_1	Class 75			Class 150			Class 300		
A	B		Gasket O.D D_2	Pitch circle diameter C	n x h	Gasket O.D D_2	Pitch circle diameter C	n x h	Gasket O.D D_2	Pitch circle diameter C	n x h
650	26	663	760	723.9	36×19	785	744.5	36×22	865	803.1	32×35
700	28	714	815	774.7	40×19	835	795.3	40×22	920	857.2	36×35
750	30	765	865	825.5	44×19	885	846.1	44×22	990	920.8	36×39
800	32	816	915	876.3	48×19	940	900.2	48×22	1055	977.9	32×42
850	34	867	965	927.1	52×19	1005	957.3	40×26	1110	1031.7	36×42
900	36	917	1035	992.1	40×22	1055	1009.6	44×26	1170	1089.2	32×45
950	38	968	1085	1042.9	40×22	1125	1069.8	40×29	1220	1140.0	36×45
1000	40	1019	1135	1093.7	44×22	1175	1120.6	44×29	1275	1190.8	40×45
1050	42	1070	1185	1144.5	48×22	1225	1171.4	48×29	1335	1244.6	36×48
1100	44	1121	1250	1203.5	36×26	1275	1222.2	52×29	1385	1295.4	40×48
1150	46	1171	1300	1254.3	40×26	1340	1284.2	40×32	1460	1365.2	36×51
1200	48	1222	1355	1305.1	44×26	1390	1335.0	44×32	1510	1416.0	40×51
(1250)	(50)	1273	1405	1355.9	44×26	1445	1385.8	48×32	1560	1466.8	44×51
(1300)	(52)	1324	1455	1409.7	48×26	1495	1436.6	52×32	1615	1517.6	48×51
1350	54	1375	1510	1460.5	48×26	1550	1492.2	56×32	1675	1577.8	48×51
(1400)	(56)	1425	1575	1521.0	40×29	1600	1543.0	60×32	1765	1651.0	36×60
(1450)	(58)	1476	1625	1571.8	44×29	1675	1611.4	48×35	1825	1713.0	40×60
1500	60	1527	1675	1622.6	44×29	1725	1662.2	52×35	1880	1763.8	40×60

* Gas sealing is difficult when using jointing sheet gaskets, fluoropolymer gaskets, and GRASEAL gaskets as full face type.
* As a general rule, we do not recommend sheet gaskets for nominal pressures exceeding class 300.
* The flange nominal diameter in ( ) should not be used as much.

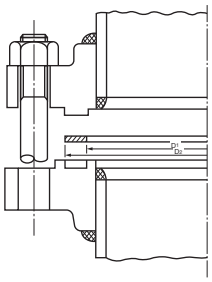
For male & female flanges and tongue & groove flanges

Applicable standard
JPI-7S-16-2020 "Dimensions of non-metallic gaskets for pipes"

Applicable flange
JPI-7S-15 "Flange for the Petroleum Industry"
ASME B16.5-2017 "Pipe Flanges and Flanged Fittings"



Large male & female seat type



Large tongue & groove seat type

Dimension Table 14

(Unit: mm)

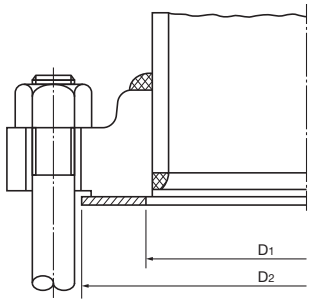
Nominal flange diameter		Large male & female seat type				Large tongue & groove seat type	
		Group I		Group II		Group II	
A	B	Gasket I.D D_1	Gasket O.D D_2	Gasket I.D D_1	Gasket O.D D_2	Gasket I.D D_1	Gasket O.D D_2
15	1/2	22	35	25	35	25	35
20	3/4	28	43	33	43	33	43
25	1	35	51	38	51	38	51
(32)	(1 1/4)	44	64	48	64	48	64
40	1 1/2	49	73	54	73	54	73
50	2	61	92	73	92	73	92
65	2 1/2	77	105	86	105	86	105
80	3	90	127	108	127	108	127
(90)	(3 1/2)	103	140	121	140	121	140
100	4	116	157	132	157	132	157
(125)	(5)	143	186	160	186	160	186
150	6	169	216	191	216	191	216
200	8	220	269	238	269	238	269
250	10	275	323	287	323	287	323
300	12	326	380	344	380	344	380
350	14	358	412	376	412	376	412
400	16	408	469	427	469	427	469
450	18	459	532	490	532	490	532
500	20	510	583	535	583	535	583
600	24	612	690	643	690	643	690

* Group II dimensions are recommended for gas seals.
* As a general rule, we do not recommend sheet gaskets for nominal pressures exceeding class 300.
* The flange nominal diameter in ( ) should not be used as much as possible.

Flat ring type for ASME B16.5 (for RF)

Applicable standard
ASME B16.21-2021 Nonmetallic flat gaskets for pipe flanges

Applicable flange
ASME B16.5-2017 Pipe flanges and flanged fittings



Dimension Table 15

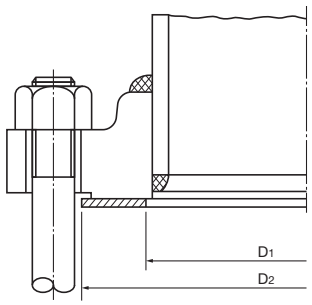
(Unit: mm)

Nominal flange diameter		Gasket I.D D_1	Gasket O.D D_2				
A	B		Class 150	Class 300	Class 400	Class 600	Class 900
15	1/2	21	48	54	54	54	64
20	3/4	27	57	67	67	67	70
25	1	33	67	73	73	73	79
32	1 1/4	42	76	83	83	83	89
40	1 1/2	48	86	95	95	95	98
50	2	60	105	111	111	111	143
65	2 1/2	73	124	130	130	130	165
80	3	89	137	149	149	149	168
90	3 1/2	102	162	165	162	162	—
100	4	114	175	181	178	194	206
125	5	141	197	216	213	241	248
150	6	168	222	251	248	267	289
200	8	219	279	308	305	321	359
250	10	273	340	362	359	400	435
300	12	324	410	422	419	457	498
350	14	356	451	486	483	492	521
400	16	406	514	540	537	565	575
450	18	457	549	597	594	613	638
500	20	508	606	654	648	683	699
550	22	559	660	705	702	733	—
600	24	610	718	775	768	791	838

Flat ring type for ASME B16.47 (for RF) large diameter series A

Applicable standard
ASME B16.21-2021 Nonmetallic flat gaskets for pipe flanges

Applicable flange
ASME B16.47-2017 Large diameter steel flanges Series A
MSS-SP-44-2016 Steel pipeline flanges



Dimension Table 16

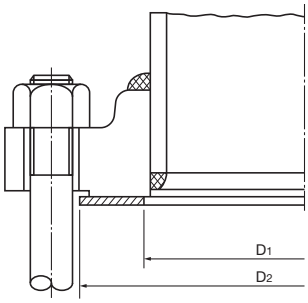
(Unit: mm)

Nominal flange diameter		Gasket I.D D_1	Gasket O.D D_2			
A	B		Class 150	Class 300	Class 400	Class 600
700	28	711	832	899	892	914
750	30	762	883	953	946	972
800	32	813	940	1006	1003	1022
850	34	864	991	1057	1054	1073
900	36	914	1048	1118	1118	1130
950	38	965	1111	1054	1073	1105
1000	40	1016	1162	1114	1127	1156
1050	42	1067	1219	1165	1178	1219
1100	44	1118	1276	1219	1232	1270
1150	46	1168	1327	1273	1289	1327
1200	48	1219	1384	1324	1346	1391
1250	50	1270	1435	1378	1403	1448
1300	52	1321	1492	1429	1454	1499
1350	54	1372	1549	1492	1518	1556
1400	56	1422	1607	1543	1568	1613
1450	58	1473	1664	1594	1619	1664
1500	60	1524	1715	1645	1683	1721

Flat ring type for ASME B16.47 (for RF) large diameter series B

Applicable standard
ASME B16.21-2021 Nonmetallic flat gaskets for pipe flanges

Applicable flange
ASME B16.47-2017 Large diameter steel flanges Series A



Dimension Table 17

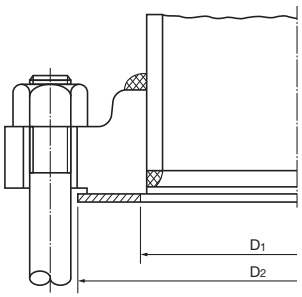
(Unit: mm)

Nominal flange diameter		Gasket I.D D_1	Gasket O.D D_2			
A	B		Class 150	Class 300	Class 400	Class 600
650	26	660	725	772	746	765
700	28	711	776	826	800	819
750	30	762	827	886	857	879
800	32	813	881	940	911	933
850	34	864	935	994	962	977
900	36	914	987	1048	1022	1048
950	38	965	1045	1099	—	—
1000	40	1016	1095	1149	—	—
1050	42	1067	1146	1200	—	—
1100	44	1118	1197	1251	—	—
1150	46	1168	1256	1318	—	—
1200	48	1219	1307	1368	—	—
1250	50	1270	1357	1419	—	—
1300	52	1321	1408	1470	—	—
1350	54	1372	1464	1530	—	—
1400	56	1422	1514	1594	—	—
1450	58	1473	1580	1656	—	—
1500	60	1524	1630	1705	—	—

Flat ring type for ASME B16.1 (for RF)

Applicable standard
ASME B16.21-2021 Nonmetallic flat gaskets for pipe flanges

Applicable flange
ASME B16.1-2015 Cast iron pipe flanges and flanged fittings



Dimension Table 18

(Unit: mm)

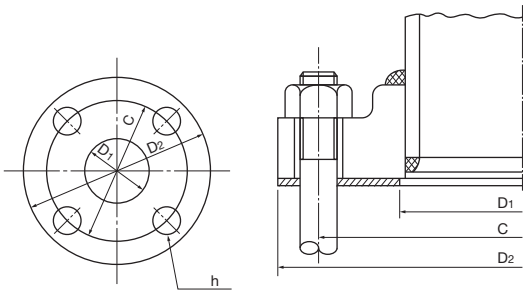
Nominal flange diameter		Gasket I.D D_1	ASME B 16.1		
			Gasket O.D D_2		
A	B		Class 25	Class 125	Class 250
25	1	33	—	67	73
32	$1\frac{1}{4}$	42	—	76	83
40	$1\frac{1}{2}$	49	—	86	95
50	2	60	—	105	111
65	$2\frac{1}{2}$	73	—	124	130
80	3	89	—	137	149
90	$3\frac{1}{2}$	102	—	162	165
100	4	114	175	175	181
125	5	141	200	197	216
150	6	168	225	222	251
200	8	219	283	279	308
250	10	273	346	352	362
300	12	324	416	410	422
350	14	356	457	451	486
400	16	406	521	514	540
450	18	457	559	549	597
500	20	508	616	606	654
600	24	610	730	718	775
750	30	762	892	883	953
900	36	914	1064	1048	1118
1050	42	1067	1232	1219	1289
1200	48	1219	1397	1384	1492
1350	54	1372	1568	—	—
1500	60	1524	1730	—	—
1800	72	1829	2067	—	—
2100	84	2134	2394	—	—
2400	96	2438	2724	—	—

* We do not recommend using jointing sheet gaskets, fluororesin gaskets, or GRASEAL gaskets for class 25.

Full-face gasket for ASME B16.1 / MSS SP-51

Applicable standard
ASME B16.21-2021 Nonmetallic flat gaskets for pipe flanges

Applicable flange
ASME B16.1-2015 Cast iron pipe flanges and flanged fittings
MSS SP-51 Class 150LW Corrosion resistance cast flanges and Flanged fittings.
Dimensions for MSS SP-51 are also applicable to MSS SP-42-1985



Dimension Table 19

(Unit: mm)

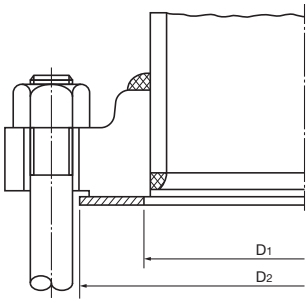
Nominal flange diameter		Gasket I.D D_1	ASME B 16.1						MSS SP-51		
			Class 25			Class 125			Class 150LW		
A	B		Gasket O.D D_2	Pitch circle diameter,C	n x h	Gasket O.D D_2	Pitch circle diameter,C	n x h	Gasket O.D D_2	Pitch circle diameter,C	n x h
8	1/4	14	—	—	—	—	—	—	64	42.9	4×11.1
10	3/8	17	—	—	—	—	—	—	64	42.9	4×11.1
15	1/2	21	—	—	—	—	—	—	89	60.3	4×15.9
20	3/4	27	—	—	—	—	—	—	98	69.9	4×15.9
25	1	33	—	—	—	108	79.4	4×15.9	108	79.4	4×15.9
32	1 1/4	42	—	—	—	117	88.9	4×15.9	117	88.9	4×15.9
40	1 1/2	48	—	—	—	127	98.4	4×15.9	127	98.4	4×15.9
50	2	60	—	—	—	152	120.7	4×19.1	152	120.7	4×19.1
65	2 1/2	73	—	—	—	178	139.7	4×19.1	178	139.7	4×19.1
80	3	89	—	—	—	191	152.4	4×19.1	191	152.4	4×19.1
90	3 1/2	102	—	—	—	216	177.8	8×19.1	—	—	—
100	4	114	229	190.5	8×19.1	229	190.5	8×19.1	229	190.5	8×19.1
125	5	141	254	215.9	8×19.1	254	215.9	8×22.2	254	215.9	8×22.2
150	6	168	279	241.3	8×19.1	279	241.3	8×22.2	279	241.3	8×22.2
200	8	219	343	298.5	8×19.1	343	298.5	8×22.2	343	298.5	8×22.2
250	10	273	406	362.0	12×19.1	406	362.0	12×25.4	406	362.0	12×25.4
300	12	324	483	431.8	12×19.1	483	431.8	12×25.4	483	431.8	12×25.4
350	14	356	533	476.2	12×22.2	533	476.3	12×28.6	533	476.3	12×28.6
400	16	406	597	539.8	16×22.2	597	539.8	16×28.6	597	539.8	16×28.6
450	18	457	635	577.9	16×22.2	635	577.9	16×31.8	635	577.9	16×31.8
500	20	508	699	635.0	20×22.2	699	635.0	20×31.8	699	635.0	20×31.8
600	24	610	813	749.3	20×22.2	813	749.3	20×34.9	813	749.3	20×34.9
750	30	762	984	914.4	28×25.4	984	914.4	28×34.9	—	—	—
900	36	914	1168	1085.9	32×25.4	1168	1085.9	32×41.3	—	—	—
1050	42	1067	1346	1257.3	36×28.6	1346	1257.3	36×41.3	—	—	—
1200	48	1219	1511	1422.4	44×28.6	1511	1422.4	44×41.3	—	—	—
1350	54	1372	1683	1593.9	44×28.6	—	—	—	—	—	—
1500	60	1524	1854	1759.0	52×31.8	—	—	—	—	—	—
1800	72	1829	2197	2095.5	60×31.8	—	—	—	—	—	—
2100	84	2134	2534	2425.7	64×34.9	—	—	—	—	—	—
2400	96	2438	2877	2755.9	68×34.9	—	—	—	—	—	—

* Gas sealing is difficult when using jointing sheet gaskets, fluororesin gaskets, and GRASEAL gaskets as full face type.
* We do not recommend using jointing sheet gaskets, fluororesin gaskets, and GRASEAL gaskets for class 25.

Flat ring type for TAYLOR FORGE

Applicable standard
TAYLOR FORGE CATALOG 571*
This dimension table is a conversion of the above dimensions into millimeter dimensions.

Applicable flange
TAYLOR FORGE class 75WN, 75SO, 175, 350
LADISH class 50WN, 50SO, 150, 300



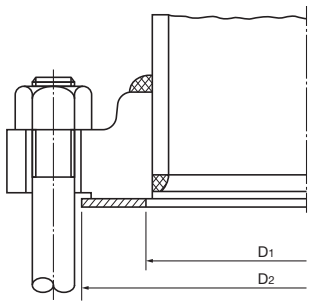
Dimension Table 20

(Unit: mm)

Nominal flange diameter		TAYLOR FORGE class 75WN LADISH class 50WN		TAYLOR FORGE class 75SO LADISH class 50SO		TAYLOR FORGE class 175 LADISH class 150		TAYLOR FORGE class 350 LADISH class 300	
A	B	Gasket I.D D_1	Gasket O.D D_2	Gasket I.D D_1	Gasket O.D D_2	Gasket I.D D_1	Gasket O.D D_2	Gasket I.D D_1	Gasket O.D D_2
650	26	705	727	740	762	711	737	724	749
700	28	756	778	791	813	762	787	775	800
750	30	806	829	841	864	813	845	826	857
800	32	860	889	892	921	864	895	876	908
850	34	911	940	943	972	911	949	927	959
900	36	962	991	994	1022	962	1000	984	1022
950	38	—	—	—	—	1013	1051	1035	1073
1000	40	—	—	—	—	1064	1102	1080	1124
1050	42	1120	1156	1146	1181	1118	1162	1130	1181
1100	44	—	—	—	—	1168	1213	1191	1241
1150	46	—	—	—	—	1219	1264	1241	1292
1200	48	1273	1308	1299	1334	1270	1314	1292	1343
1250	50	—	—	—	—	1321	1365	—	—
1300	52	—	—	—	—	1372	1422	1391	1454
1350	54	1429	1467	1460	1499	1422	1473	1441	1505
1500	60	1581	1619	1613	1651	1575	1626	1594	1657
1650	66	1737	1781	1775	1819	1727	1778	1711	1838
1800	72	1889	1934	1927	1972	1880	1943	1864	1991
2100	84	—	—	—	—	2188	2289	2197	2324
2400	96	—	—	—	—	2543	2594	2499	2638

Flat ring type for DIN flange

Applicable standard
DIN 2690-1966



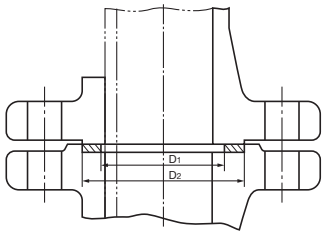
Dimension Table 21

(Unit: mm)

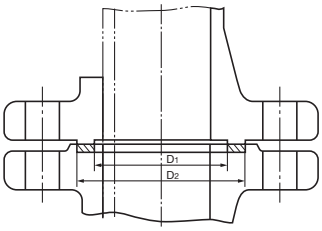
Nominal flange diameter (NW)	Gasket I.D D_1	Gasket O.D D_2					
		Nominal pressure (ND)					
		1 and 2.5	6	10	16	25	40
4	6	—	—	—	—	30	—
6	10	Same with ND 6	28	Same with ND 40	Same with ND 40	Same with ND 40	38
8	14		33				43
10	18		38				45
15	22		43				50
20	28		53				60
25	35		63				70
32	43		75				82
40	49		85				92
50	61		95				107
65	77		115				127
80	90		132				142
100	115		152	Same with ND 16	162		168
125	141		182		192		195
150	169		207		218		225
175	195		237		248	255	267
200	220		262		273	285	292
250	274		318	328	330	342	353
300	325		373	378	385	402	418
350	368		423	438	445	458	475
400	420		473	490	497	515	547
450	470		528	540	557	565	572
500	520		578	595	618	625	628
600	620		680	695	735	730	745
700	720		785	810	805	830	850
800	820		890	915	910	940	970
900	920		990	1015	1010	1040	1080
1000	1020		1090	1120	1125	1150	1190
1200	1220	1290	1305	1340	1340	1360	1395
1400	1420	1490	1520	1545	1540	1575	1615
1600	1620	1700	1720	1770	1760	1795	1830
1800	1820	1900	1930	1970	1960	2000	—
2000	2020	2100	2135	2180	2165	2230	—
2200	2220	2305	2345	2380	2375	—	—
2400	2420	2505	2555	2590	2585	—	—
2600	2620	2705	2760	2790	2785	—	—
2800	2820	2920	2970	3010	—	—	—
3000	3020	3120	3170	3225	—	—	—
3200	3220	3320	3380	—	—	—	—
3400	3420	3520	3590	—	—	—	—
3600	3620	3730	3800	—	—	—	—
3800	3820	3930	—	—	—	—	—
4000	4020	4130	—	—	—	—	—

Male & female flanges and tongue & groove for DIN flanges

Applicable standard
DIN 2691-1971
DIN 2692-1966



Large male & female seat type



Large tongue & groove seat type

Dimension Table 22

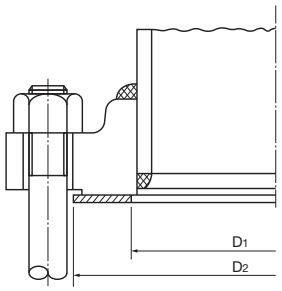
(Unit: mm)

Nominal flange diameter	Large male & female seat type		Large tongue & groove seat type	
	Gasket I.D D_1	Gasket O.D D_2	Gasket I.D D_1	Gasket O.D D_2
4	—	—	20	30
6	—	—	20	30
8	—	—	22	32
10	18	334	24	34
15	22	39	29	39
20	28	50	36	50
25	35	57	43	57
32	43	65	51	65
40	49	75	61	75
50	61	87	73	87
65	77	109	95	109
80	90	120	106	120
100	115	149	129	149
125	141	175	155	175
150	169	203	183	203
175	195	233	213	233
200	220	259	239	259
250	274	312	292	312
300	325	363	343	363
350	368	421	395	421
400	420	473	447	473
500	520	575	549	575
600	620	675	649	675
700	720	777	751	777
800	820	882	856	882
900	920	987	961	987
1000	1020	1091	1061	1091

Flat ring type for AWWA C207-55

Applicable standard
This dimension table is set by NICHIAS based on AWWA C207-55.

Applicable flange
AWWA C207-55 "Tentative Standard Specifications for STEEL PIPE FLANGES"



Dimension Table 23

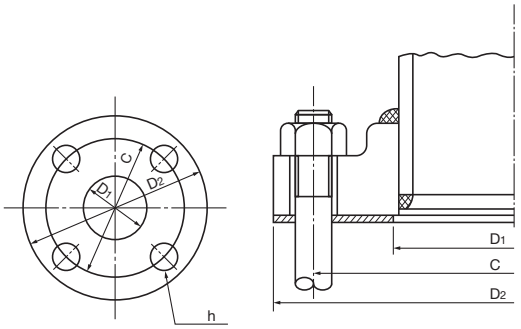
(Unit: mm)

Nominal flange diameter		AWWA Class B		AWWA Class D		AWWA Class E	
A	B	Gasket I.D D_1	Gasket O.D D_2	Gasket I.D D_1	Gasket O.D D_2	Gasket I.D D_1	Gasket O.D D_2
15	1/2	—	—	—	—	22.4	44.4
20	3/4	—	—	—	—	27.7	54.0
25	1	—	—	—	—	35.1	63.5
32	1 1/4	—	—	—	—	43.7	73.0
40	1 1/2	—	—	—	—	50.0	82.6
50	2	—	—	—	—	62.0	101.6
65	2 1/2	—	—	—	—	74.7	120.6
80	3	—	—	—	—	90.4	133.4
90	3 1/2	—	—	—	—	103.1	158.8
100	4	—	—	—	—	115.8	171.4
125	5	—	—	—	—	143.8	193.7
150	6	173.0	222.5	173.0	219.1	170.7	219.1
200	8	223.8	279.4	223.8	276.2	221.5	276.2
250	10	277.8	342.9	277.8	336.6	276.4	336.6
300	12	328.6	412.8	328.6	406.4	327.2	406.4
350	14	360.4	454.0	360.4	447.7	360.4	447.7
400	16	411.2	517.5	411.2	511.2	411.2	511.2
450	18	462.0	555.6	462.0	546.1	462.0	546.1
500	20	512.8	612.8	512.8	603.2	512.8	603.2
550	22	563.6	669.9	563.6	657.2	—	—
600	24	614.4	727.1	614.4	714.4	614.4	714.4
650	26	665	784	665	772	665	772
700	28	716	841	716	829	716	829
750	30	767	889	767	879	767	879
800	32	818	952	818	937	818	937
850	34	868	1003	868	987	868	987
900	36	919	1060	919	1045	919	1045
950	38	970	1124	970	1108	970	1108
1000	40	1021	1175	1021	1159	1021	1159
1050	42	1072	1229	1072	1216	1072	1216
1100	44	1122	1286	1122	1273	1122	1273
1150	46	1173	1337	1173	1324	1173	1324
1200	48	1224	1394	1224	1381	1224	1381
1250	50	1275	1448	1275	1432	1275	1431
1300	52	1326	1505	1326	1489	1326	1489
1350	54	1376	1559	1376	1546	1376	1546
1500	60	1529	1724	1529	1711	1529	1711
1650	66	1681	1865	1681	1883	1681	1883
1800	72	1834	2091	1834	2048	1834	2048
2100	84	2138	2384	2138	2372	2138	2372
2400	96	2443	2708	2443	2696	2443	2696

AWWA C207-55 Full-face gasket

Applicable standard
This dimension table is set by NICHIAS based on AWWA C207-55.

Applicable flange
AWWA C207-55 "Tentative Standard Specifications for STEEL PIPE FLANGES"



Dimension Table 24

(Unit: mm)

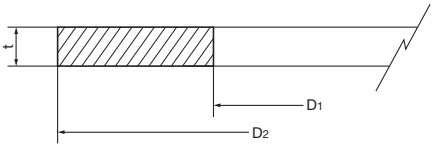
Nominal flange diameter		AWWA Class B				AWWA Class D				AWWA Class E			
A	B	Gasket I.D D_1	Gasket O.D D_2	Pitch circle diameter,C	n x h	Gasket I.D D_1	Gasket O.D D_2	Pitch circle diameter,C	n x h	Gasket I.D D_1	Gasket O.D D_2	Pitch circle diameter,C	n x h
15	1/2	—	—	—	—	—	—	—	—	22.4	88.9	60.3	4×15.9
20	3/4	—	—	—	—	—	—	—	—	27.7	98.4	69.8	4×15.9
25	1	—	—	—	—	—	—	—	—	35.1	108.0	79.4	4×15.9
32	1 1/4	—	—	—	—	—	—	—	—	43.7	117.5	88.9	4×15.9
40	1 1/2	—	—	—	—	—	—	—	—	50.0	127.0	98.4	4×15.9
50	2	—	—	—	—	—	—	—	—	62.0	152.4	120.6	4×19.0
65	2 1/2	—	—	—	—	—	—	—	—	74.7	177.8	139.7	4×19.0
80	3	—	—	—	—	—	—	—	—	90.4	190.5	152.4	4×19.0
90	3 1/2	—	—	—	—	—	—	—	—	103.1	215.9	177.8	8×19.0
100	4	—	—	—	—	—	—	—	—	115.8	228.6	190.5	8×19.0
125	5	—	—	—	—	—	—	—	—	143.8	254.0	215.9	8×22.2
150	6	173.0	279.4	241.3	8×19.0	173.0	279.4	241.3	8×22.2	170.7	279.4	241.3	8×22.2
200	8	223.8	342.9	298.4	8×19.0	223.8	342.9	298.4	8×22.2	221.5	342.9	298.4	8×22.2
250	10	277.8	406.4	362.0	12×19.0	277.8	406.4	362.0	12×25.4	276.4	406.4	362.0	12×25.4
300	12	328.6	482.6	431.8	12×19.0	328.6	482.6	431.8	12×25.4	327.2	482.6	431.8	12×25.4
350	14	360.4	533.4	476.2	12×22.2	360.4	533.4	476.2	12×28.6	360.4	533.4	476.2	12×28.6
400	16	411.2	596.9	539.8	16×22.2	411.2	596.9	539.8	16×28.6	411.2	596.9	539.8	16×28.6
450	18	462.0	635.0	577.8	16×22.2	462.0	635.0	577.8	16×31.8	462.0	635.0	577.8	16×31.8
500	20	512.8	698.5	635.0	20×22.2	512.8	698.5	635.0	20×31.8	512.8	698.5	635.0	20×31.8
550	22	563.6	749.3	692.2	20×22.2	563.6	749.3	692.2	20×34.9	—	—	—	—
600	24	614.4	812.8	749.3	20×22.2	614.4	812.8	749.3	20×34.9	614.4	812.8	749.3	20×34.9
650	26	665	870	806.4	24×22.2	665	870	806.4	24×34.9	665	870	806.4	24×34.9
700	28	716	927	863.6	28×22.2	716	927	863.6	28×34.9	716	927	863.6	28×34.9
750	30	767	984	914.4	28×25.4	767	984	914.4	28×34.9	767	984	914.4	28×34.9
800	32	818	1060	977.9	28×25.4	818	1060	977.9	28×41.3	818	1060	977.9	28×41.3
850	34	868	1111	1028.7	32×25.4	868	1111	1028.7	32×41.3	868	1111	1028.7	32×41.3
900	36	919	1168	1085.8	32×25.4	919	1168	1085.8	32×41.3	919	1168	1085.8	32×41.3
950	38	970	1238	1149.4	32×25.4	970	1238	1149.4	32×41.3	970	1238	1149.4	32×41.3
1000	40	1021	1289	1200.2	36×25.4	1021	1289	1200.2	36×41.3	1021	1289	1200.2	36×41.3
1050	42	1072	1346	1257.3	36×28.6	1072	1346	1257.3	36×41.3	1072	1346	1257.3	36×41.3
1100	44	1122	1403	1314.4	40×28.6	1122	1403	1314.4	40×41.3	1122	1403	1314.4	40×41.3
1150	46	1173	1454	1365.2	40×28.6	1173	1454	1365.2	40×41.3	1173	1454	1365.2	40×41.3
1200	48	1224	1511	1422.4	44×28.6	1224	1511	1422.4	44×41.3	1224	1511	1422.4	44×41.3
1250	50	1275	1568	1479.6	44×31.8	1275	1568	1479.6	44×47.6	1275	1568	1479.6	44×47.6
1300	52	1326	1626	1536.7	44×31.8	1326	1626	1536.7	44×47.6	1326	1626	1536.7	44×47.6
1350	54	1376	1683	1593.8	44×34.9	1376	1683	1593.8	44×47.6	1376	1683	1593.8	44×47.6
1500	60	1529	1854	1759.0	52×34.9	1529	1854	1759.0	52×47.6	1529	1854	1759.0	52×47.6
1650	66	1681	2032	1930.4	52×34.9	1681	2032	1930.4	52×47.6	1681	2032	1930.4	52×47.6
1800	72	1834	2197	2095.5	60×34.9	1834	2197	2095.5	60×47.6	1834	2197	2095.5	60×47.6
2100	84	2138	2534	2425.7	64×41.3	2138	2534	2425.7	64×54.0	2138	2534	2425.7	64×54.0
2400	96	2443	2877	2755.9	68×47.6	2443	2877	2755.9	68×60.3	2443	2877	2755.9	68×60.3

NAFLON™ lining piping gasket

Applicable gasket
TOMBO No.9007, 9007-LC, 1133

Applicable standard
This dimension table is set by NICHIAS based on the corrosion resistant lining fluoropiping dimensions.

Applicable flange
Fluoro Piping JIS 10K, JPI 150LB



Dimension Table 25

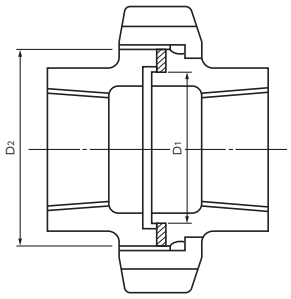
(Unit: mm)

Nominal flange diameter		JIS 10K			JPI Class 150		
A	B	Gasket I.D D_1	Gasket O.D D_2	Product thickness t	Gasket I.D D_1	Gasket O.D D_2	Product thickness t
15	1/2	16	58		16	47	
20	3/4	22	63		22	56	
25	1	27	74		28	66	
40	1 1/2	45	89		45	85	
50	2	58	104		58	104	
65	2 1/2	71	124		71	123	
80	3	85	134	1.5	85	135	1.5
100	4	104	159		110	173	
125	5	128	189		128	196	
150	6	153	220		160	221	
200	8	202	270		214	277	
250	10	251	333		266	338	
300	12	300	378		328	408	

Gasket for union fittings

Applicable gasket
Target mainly on jointing sheet.

Standards (1)
JIS B 2301 2013 "Screwed Type Malleable Cast Iron Pipe Fittings"
Note: (1) This dimension table is set by NICHIAS based on the above standards



Dimension Table 26

(Unit: mm)

Union nominal diameter B	Inner diameter D_1	Outer diameter D_2
1/8	13	18
1/4	17	23
3/8	21	28
1/2	25	32
3/4	31	39
1	39	48
1 1/4	47	57
1 1/2	54	64
2	66	78
2 1/2	82	96
3	96	111
3 1/2	109	126
4	122	141
5	151	170
6	178	200

* We recommend a gasket thickness of 2.0 mm or 1.5 mm.

NAFLON™ PTFE Envelope Gaskets

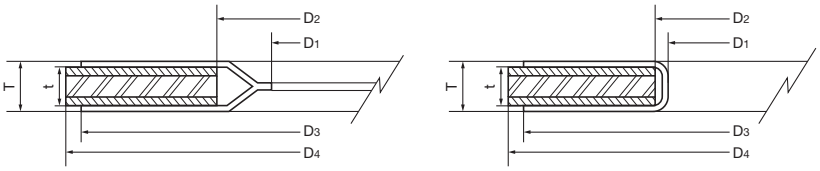
Applicable gaskets

- TOMBO™ No.9010-A type (basic type)
- TOMBO™ No.9010-B type (large diameter compatible type)
- TOMBO™ No.9010-AS type (right angle processing type)
- TOMBO™ No.9010-RA type (peripheral welding)
- TOMBO™ No.9010-RS type (peripheral welding, right angle processing type)

For TOMBO™ No.9010-A / 9010-B

Applicable standard
This dimension table is set by NICHIAS based on JIS B 2220-2012.

Applicable flange
JIS B 2220-2012 "Steel pipe flanges"



Type A　　Type B

Dimension Table 26

(Unit: mm)

Nominal flange diameter		D_1	D_2	5K		10K (Parellel)		16K		20K	
A	B			D_3	D_4	D_3	D_4	D_3	D_4	D_3	D_4
10	3/8	18	26	42	45	49	53	49	53	49	53
15	1/2	22	30	46	50	54	58	54	58	54	58
20	3/4	28	36	52	55	59	63	59	63	59	63
25	1	35	43	59	65	70	74	70	74	70	74
32	1 1/4	43	51	71	78	79	84	79	84	79	84
40	1 1/2	49	57	77	83	85	89	85	89	85	89
50	2	62	69	88	93	99	104	99	104	99	104
65	2 1/2	78	85	106	118	119	124	119	124	119	124
80	3	91	98	121	129	129	134	135	140	135	140
90	3 1/2	104	111	134	139	140	144	148	150	148	150
100	4	117	124	145	149	155	159	163	165	163	165
125	5	144	151	178	184	185	190	198	203	198	203
150	6	171	178	205	214	215	220	233	238	233	238
175	7	193	200	229	240	240	245	—	—	—	—
200	8	219	226	255	260	265	270	278	283	278	283
225	9	244	251	280	285	285	290	—	—	—	—
250	10	271	278	313	325	321	333	345	356	345	356
300	12	321	328	363	370	370	378	395	406	395	406
350	14	356	363	401	413	415	423	436	450	436	450
400	16	407	414	461	473	471	486	487	510	487	510
450	18	457	464	511	533	530	541	556	575	556	575
500	20	510	517	571	583	583	596	609	630	609	630
550	22	561	568	625	641	635	650	665	684	665	684
600	24	612	619	676	691	684	700	716	734	716	734
650	26	670	674	735	746	740	750	770	784	790	805
700	28	725	729	785	796	800	810	820	836	840	855
750	30	775	779	840	850	855	870	880	896	900	918
800	32	825	829	890	900	905	920	930	945	960	978
850	34	875	879	940	950	955	970	980	995	1020	1038
900	36	925	929	990	1000	1005	1020	1030	1045	1070	1088
1000	40	1030	1034	1090	1100	1110	1124	1140	1158	—	—
1100	44	1130	1134	1200	1210	1220	1234	1240	1258	—	—
1200	48	1230	1234	1305	1320	1325	1344	1350	1368	—	—
1300	52	1335	1339	—	—	—	—	1450	1474	—	—
1350	54	1390	1394	1460	1475	1480	1498	1510	1534	—	—
1400	56	1435	1439	—	—	—	—	1560	1584	—	—
1500	60	1545	1549	1615	1630	1635	1658	1670	1694	—	—

* ☐ Inside the bold border: Cannot be used for a slip-on welded flange (B type) with a nominal pressure of 20K and a flange nominal diameter of 10 to 50A.
* Please contact us for other core materials and core structures.

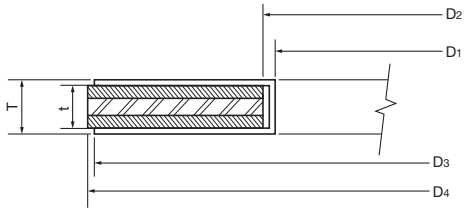
Nominal flange diameter		shape	Core material symbol	Product thickness T	Core thickness t
A	B				
10 ~ 600	3/8 ~ 24	Type A	3, 4, 5, 7 (Jointing sheet)	2.8	2.0
			6, 8 (Jointing sheet with felt)	3.2	2.4
650 ~ 900	26 ~ 36	Type B	3, 4, 5, 7 (Jointing sheet)	3.8	3.0
			6, 8 (Jointing sheet with felt)	3.2	2.4
1000 ~ 1500	40 ~ 60		3, 4, 5, 7 (Jointing sheet)	3.8	3.0
			6, 8 (Jointing sheet with felt)	5.0	4.2

* Standard thickness of standard dimensions.

For TOMBO™ No.9010-AS

Applicable standard
This dimension table is set by NICHIAS based on JIS B 2220-2012.

Applicable flange
JIS B 2220-2012 "Steel pipe flanges"



Type AS

Dimension Table 28

(Unit: mm)

Nominal flange diameter		D_1	D_2	5K		10K (Parellel)		16K, 20K	
A	B			D_3	D_4	D_3	D_4	D_3	D_4
10	3/8	26	28	42	45	48	53	48	53
15	1/2	31	33	48	50	52	58	52	58
20	3/4	36	38	52	55	58	63	58	63
25	1	41	43	62	65	70	74	70	74
32	1 1/4	51	53	72	78	80	84	80	84
40	1 1/2	56	58	78	83	85	89	85	89
50	2	67	70	88	93	100	104	100	104
65	2 1/2	92	95	112	118	120	124	120	124
80	3	102	105	125	129	130	134	135	140
90	3 1/2	112	115	135	139	140	144	145	150
100	4	122	125	145	149	155	159	160	165
125	5	152	155	180	184	185	190	195	203
150	6	187	190	210	214	215	220	230	238
175	7	207	210	235	240	240	245	—	—
200	8	232	235	255	260	265	270	275	283
225	9	257	260	280	285	285	290	—	—
250	10	297	300	320	325	325	333	345	356
300	12	337	340	365	370	370	378	395	406
350	14	377	380	405	413	415	423	440	450
400	16	427	430	465	473	475	486	495	510
450	18	477	480	525	533	530	541	560	575
500	20	527	530	575	583	585	596	615	630
550	22	577	580	630	641	640	650	670	684
600	24	627	630	680	691	690	700	720	734

* When used for a slip-on welded flange (B type) with a nominal pressure of 20K and a flange nominal diameter of 10 to 50A, the gasket inner diameter is inside the flange inner diameter therefore it cannot be used.
* Please contact us for other core materials and core structures.

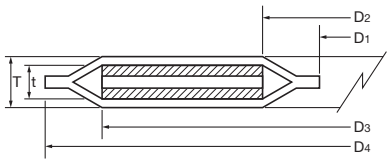
Nominal flange diameter		shape	Core material symbol	Product thickness T	Core thickness t
A	B				
10 ~ 40	3/8 ~ 1 1/2	Type AS	3, 4, 5, 7 (Jointing sheet)	2.5	1.5
			6, 8 (Jointing sheet with felt)	2.5	1.5
50 ~ 600	2 ~ 24		3, 4, 5, 7 (Jointing sheet)	3.0	2.0
			6, 8 (Jointing sheet with felt)	3.4	2.4

* Standard thickness of standard dimensions.

For TOMBO™ No. 9010-RA

Applicable standard
This dimension table is set by NICHIAS based on JIS B 2220-2012.

Applicable flange
JIS B 2220-2012 "Steel pipe flanges"



Type RA

Dimension Table 29

(Unit: mm)

Nominal flange diameter		D_1	D_2	D_3		D_4	
				Nominal pressure K		Nominal pressure K	
A	B			5	10	5	10
10	3/8	13	20	33	41	45	53
15	1/2	17	24	38	46	50	58
20	3/4	22	29	43	51	55	63
25	1	28	35	53	62	65	74
32	1 1/4	36	43	66	72	78	84
40	1 1/2	42	49	71	77	83	89
50	2	53	60	81	92	93	104
65	2 1/2	66	73	106	112	118	124
80	3	79	86	117	122	129	134
90	3 1/2	91	98	127	132	139	144
100	4	103	110	137	147	149	159
125	5	135	142	172	178	184	190
150	6	162	169	202	208	214	220
175	7	184	191	228	233	240	245
200	8	210	217	248	258	260	270
225	9	236	243	273	278	285	290
250	10	270	277	313	321	325	333
300	12	316	323	358	366	370	378
350	14	351	358	401	411	413	423
400	16	410	417	461	474	473	486
450	18	455	462	521	529	533	541
500	20	511	518	571	584	583	596
550	22	564	571	629	638	641	650
600	24	616	623	679	688	691	700

* Please contact us for other core materials and core structures.

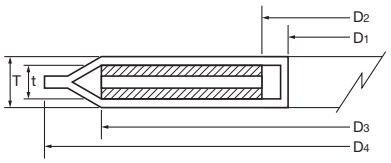
Nominal flange diameter		shape	Core material symbol	Product thickness T	Core thickness t
A	B				
10 ~ 600	3/8 ~ 24	Type RA	3, 4, 5, 7 (Jointing sheet)	2.8	2.0
			6, 8 (Jointing sheet with felt)	3.2	2.4

* Standard thickness of standard dimensions.

For TOMBO™ No. 9010-RS

Applicable standard
This dimension table is set by NICHIAS based on JIS B 2220-2012.

Applicable flange
JIS B 2220-2012 "Steel pipe flanges"



Type RS

Dimension Table 30

(Unit: mm)

Nominal flange diameter		D_1	D_2	D_3		D_4	
				Nominal pressure K		Nominal pressure K	
A	B			5	10	5	10
10	3/8	13	16	33	41	45	53
15	1/2	17	20	38	46	50	58
20	3/4	22	25	43	51	55	63
25	1	28	31	53	62	65	74
32	1 1/4	36	39	66	72	78	84
40	1 1/2	42	45	71	77	83	89
50	2	53	56	81	92	93	104
65	2 1/2	66	69	106	112	118	124
80	3	79	82	117	122	129	134
90	3 1/2	91	94	127	132	139	144
100	4	103	106	137	147	149	159
125	5	143	146	172	178	184	190
150	6	179	182	202	208	214	220
175	7	198	201	228	233	240	245
200	8	224	227	248	258	260	270
225	9	249	252	273	278	285	290
250	10	292	295	313	321	325	333
300	12	332	335	358	366	370	378
350	14	372	375	401	411	413	423
400	16	425	428	461	474	473	486
450	18	475	478	521	529	533	541
500	20	525	528	571	584	583	596
550	22	574	577	629	638	641	650
600	24	624	627	679	688	691	700

* Please contact us for other core materials and core structures.

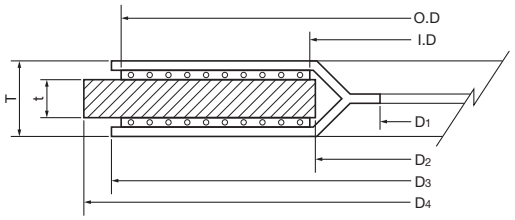
Nominal flange diameter		shape	Core material symbol	Product thickness T	Core thickness t
A	B				
10 ~ 600	3/8 ~ 24	Type RS	3, 4, 5, 7 (Jointing sheet)	3.0	2.0
			6, 8 (Jointing sheet with felt)	3.4	2.4

* Standard thickness of standard dimensions.

For TOMBO™ No. 9010-A-9

Applicable standard
This dimension table is set by NICHIAS based on JIS B 2220-2012.

Applicable flange
JIS B 2220-2012 "Steel pipe flanges"



Type A

Dimension Table 31

(Unit: mm)

Nominal flange diameter		D_1	D_2	10K (Parallel)				16, 20K			
				D_3	D_4	Wire mesh		D_3	D_4	Wire mesh	
A	B					I.D	O.D			I.D	O.D
10	3/8	18	26	49	53	30	46	49	53	30	46
15	1/2	22	30	54	58	35	50	54	58	35	50
20	3/4	28	36	59	63	40	56	59	63	40	56
25	1	35	43	70	74	45	68	70	74	45	68
32	1 1/4	43	51	79	84	55	78	79	84	55	78
40	1 1/2	49	57	85	89	60	83	85	89	60	83
50	2	62	70	99	104	72	98	99	104	72	98
65	2 1/2	78	86	119	124	97	118	119	124	97	118
80	3	91	99	129	134	107	128	135	140	107	133
90	3 1/2	104	112	140	144	117	138	148	150	117	143
100	4	117	125	155	159	127	153	163	165	127	158
125	5	144	152	185	190	157	183	198	203	157	193
150	6	170	179	215	220	192	213	233	238	192	228
175	7	193	201	240	245	212	238	—	—	—	—
200	8	219	227	265	270	237	263	278	283	237	273
225	9	244	252	285	290	262	283	—	—	—	—
250	10	271	279	321	333	302	323	345	356	302	343
300	12	321	329	370	378	342	368	395	406	342	393
350	14	356	364	415	423	382	413	436	450	382	438
400	16	407	415	471	486	432	473	487	510	432	493
450	18	457	465	530	541	482	528	556	575	482	558
500	20	510	518	583	596	532	583	609	630	532	613
550	22	561	569	635	650	582	638	665	684	582	668
600	24	612	620	684	700	632	688	716	734	632	718

* When used for a slip-on welded flange (B type) with a nominal pressure of 10K, a flange nominal diameter of 16K of 10A to 40A and a nominal pressure of 20K, the inner diameter of the gasket is inside the inner diameter of the flange therefore it cannot be used.

Nominal flange diameter		shape	Core material symbol	Product thickness T	Core thickness t
A	B				
10 ~ 600	3/8 ~ 24	Type A	9 (TOMBO No.1120+Stainless wire mesh)	3.9	2.0

* Standard thickness of standard dimensions. The core thickness indicates the thickness excluding stainless steel.

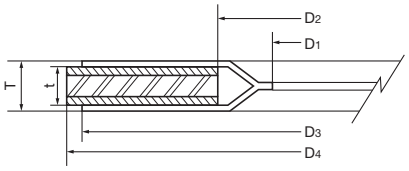
For TOMBO™ No. 9010-A/9010-B use

Applicable standard

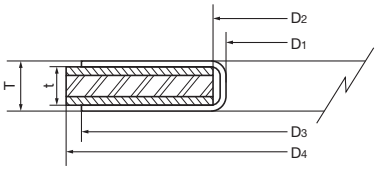
JPI-7S-75-2019 (Class 150/300, 24B or less)
"PTFE Jacketed and Solid gaskets for Petroleum Industry"
* Class 75, class 150/300 dimensions of 26B or more It was set by NICHIAS based on JPI-7S-43-2008.

Applicable flange

JPI-7S-15-2011 "Pipe Flanges for the Petroleum Industry"
JPI-7S-43-2008 "Large Diameter Carbon Steel Flanges for the Petroleum Industry"
ASME B16.5 2017 / API 605
"Pipe Flanges and Flanged Fittings"



Type A



Type B

Dimension Table 32

(Unit: mm)

Nominal flange diameter		D_1	D_2	Class 75		Class 150		Class 300	
A	B			D_3	D_4	D_3	D_4	D_3	D_4
15	1/2	17	24	—	—	47	47	47	53
20	3/4	22	29	—	—	56	56	56	66
25	1	28	35	—	—	66	66	66	72
32	1 1/4	36	43	—	—	75	75	75	82
40	1 1/2	42	49	—	—	85	85	85	94
50	2	53	60	—	—	92	104	92	110
65	2 1/2	66	73	—	—	105	123	105	129
80	3	90	97	—	—	127	135	127	148
90	3 1/2	103	110	—	—	140	161	140	164
100	4	116	123	—	—	157	173	157	180
125	5	143	150	—	—	186	196	186	215
150	6	169	176	—	—	216	221	216	250
200	8	220	227	—	—	270	277	270	306
250	10	275	282	—	—	324	338	324	360
300	12	326	333	—	—	381	408	381	420
350	14	358	365	—	—	413	449	413	484
400	16	408	415	—	—	470	512	470	538
450	18	459	466	—	—	533	547	533	595
500	20	510	517	—	—	584	604	584	651
600	24	612	619	—	—	692	715	692	772
650	26	673	677	705	705	711	722	737	769
700	28	724	728	756	756	762	773	787	822
750	30	775	779	806	807	813	824	845	883
800	32	826	830	857	857	864	878	902	937
850	34	876	880	908	908	921	932	952	991
900	36	927	931	965	970	972	984	1010	1045
950	38	978	982	1016	1021	1022	1042	1060	1096
1000	40	1029	1033	1067	1072	1080	1092	1118	1146
1050	42	1080	1084	1118	1123	1130	1143	1168	1197
1100	44	1130	1134	1168	1178	1187	1194	1216	1248
1150	46	1181	1185	1226	1229	1238	1253	1276	1315
1200	48	1232	1236	1276	1280	1289	1304	1327	1365
1350	54	1384	1388	1429	1435	1441	1461	1480	1527
1500	60	1537	1541	1588	1594	1600	1625	1651	1702

* If the flange nominal diameter of the slip-on welded flange is 2-1/2B (65A) or less, the gasket inner diameter is inside the flange inner diameter and cannot be used.
* Please contact us for other core materials and core structures.

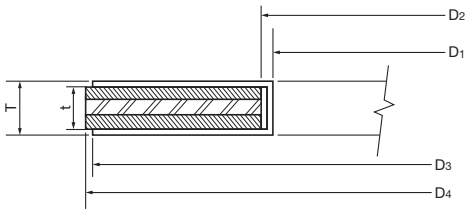
Nominal flange diameter		shape	Core material symbol	Product thickness T	Core thickness t
A	B				
15 ~ 600	1/2 ~ 24	Type A	3, 4, 5, 7 (Jointing sheet)	2.8	2.0
			6, 8 (Jointing sheet with felt)	3.2	2.4
650 ~ 900	26 ~ 36	Type B	3, 4, 5, 7 (Jointing sheet)	3.8 Note 1	3.0 Note 1
			6, 8 (Jointing sheet with felt)	3.2	2.4
950 ~ 1500	38 ~ 60		3, 4, 5, 7 (Jointing sheet)	3.8 Note 1	3.0 Note 1
			6, 8 (Jointing sheet with felt)	5.0	4.2

Note 1: Class 150 product thickness T is 2.8 and core thickness is 2.0.
* Standard thickness of standard dimensions.

For TOMBO™ No. 9010-AS

Applicable standard
This dimension table is set by NICHIAS based on JPI-7S-15-2011.

Applicable flange
JPI-7S-15-2011 "Forged Steel Flange for Petroleum Industry"
ASME B16.5 2017 / API 605 "Pipe Flanges and Flanged Fittings"



Type AS

Dimension Table 33

(Unit: mm)

Nominal flange diameter		D_1	D_2	Class 150		Class 300	
A	B			D_3	D_4	D_3	D_4
15	1/2	21	24	47	47	47	53
20	3/4	26	29	56	56	56	66
25	1	32	35	66	66	66	72
32	1 1/4	40	43	75	75	75	82
40	1 1/2	46	49	85	85	85	94
50	2	57	60	92	104	92	110
65	2 1/2	70	73	105	123	105	129
80	3	94	97	127	135	127	148
90	3 1/2	107	110	140	161	140	164
100	4	120	123	157	173	157	180
125	5	147	150	186	196	186	215
150	6	173	176	216	221	216	250
200	8	224	227	270	277	270	306
250	10	279	282	324	338	324	360
300	12	330	333	381	408	381	420
350	14	362	365	413	449	413	484
400	16	412	415	470	512	470	538
450	18	463	466	533	547	533	595
500	20	514	517	584	604	584	651
600	24	616	619	692	715	692	772

* ☐ Inside the bold border: If the flange nominal diameter of the JPI-7S-15 slip-on welded flange is 21 / 2B (65A) or less, the gasket inner diameter (D1) is inside the flange inner diameter therefore it cannot be used.
* Please contact us for other core materials and core structures.

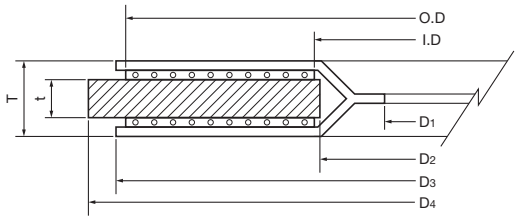
Nominal flange diameter		shape	Core material symbol	Product thickness T	Core thickness t
A	B				
15 ~ 40	1/2 ~ 1 1/2	Type AS	3, 4, 5, 7 (Jointing sheet)	2.5	1.5
			6, 8 (Jointing sheet with felt)	2.5	1.5
50 ~ 600	2 ~ 24		3, 4, 5, 7 (Jointing sheet)	3.0	2.0
			6, 8 (Jointing sheet with felt)	3.4	2.4

* Standard thickness of standard dimensions.

For TOMBO™ No. 9010-AS-9

Applicable standard
This dimension table is set by NICHIAS based on JPI-7S-15-2011.

Applicable flange
JPI-7S-15-2011 "Forged Steel Flange for Petroleum Industry"
ASME B16.5 2017 / API 605 "Pipe Flanges and Flanged Fittings"



Type A

Dimension Table 34

(Unit: mm)

Nominal flange diameter		D_1	D_2	Class 150				Class 300			
				D_3	D_4	Wire mesh		D_3	D_4	Wire mesh	
A	B					I.D	O.D			I.D	O.D
15	1/2	17	25	47	47	26	36	47	53	26	36
20	3/4	22	30	56	56	31	42	56	66	31	42
25	1	28	36	66	66	38	50	66	72	38	50
32	1 1/4	36	44	75	75	49	63	75	82	49	63
40	1 1/2	42	50	85	85	55	72	85	94	55	72
50	2	53	61	92	104	70	90	92	110	70	90
65	2 1/2	66	74	105	123	83	103	105	129	83	103
80	3	90	98	127	135	105	125	127	148	105	125
90	3 1/2	103	111	140	161	118	138	140	164	118	138
100	4	116	124	157	173	136	155	157	180	136	155
125	5	143	151	186	196	164	184	186	215	164	184
150	6	169	177	216	221	194	214	216	250	194	214
200	8	220	228	270	277	242	268	270	306	242	268
250	10	275	283	324	338	290	322	324	360	290	322
300	12	326	334	381	408	347	379	381	420	347	379
350	14	358	365	413	449	377	411	413	484	377	411
400	16	408	416	470	512	432	468	470	538	432	468
450	18	459	467	533	547	487	531	533	595	487	531
500	20	510	518	584	604	537	582	584	651	537	582
600	24	612	620	692	715	637	690	692	772	637	690

* ☐ Inside the bold border: If the flange nominal diameter of the JPI-7S-15 slip-on welded flange is 21 / 2B (65A) or less, the gasket inner diameter (D1) is inside the flange inner diameter therefore it cannot be used.
* Please contact us for other core materials and core structures.

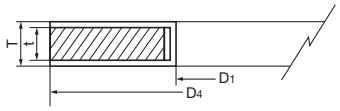
Nominal flange diameter		shape	Core material symbol	Product thickness T	Core thickness t
A	B				
15 ~ 600	1/2 ~ 24	Type A	9 (TOMBO No.1120+Stainless wire mesh)	3.9	2.0

* Standard thickness of standard dimensions. The core thickness indicates the thickness excluding stainless steel.

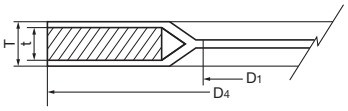
NAFLON™ lining for piping

Applicable standard
This dimension table is based on the corrosion resistant lining fluoropiping dimensions.

Applicable flange
Fluoro Piping JIS 10K, JPI 150LB



Type AS



Type A

Dimension Table 35

(Unit: mm)

Nominal flange diameter		JIS 10K		JPI Class 150	
A	B	D_1	D_4	D_1	D_4
15	1/2	16	58	16	47
20	3/4	22	63	22	56
25	1	27	74	28	66
40	1 1/2	45	89	45	85
50	2	58	104	58	104
65	2 1/2	71	124	71	123
80	3	85	134	85	135
100	4	104	159	110	173
125	5	128	189	128	196
150	6	153	220	160	221
200	8	202	270	214	277
250	10	251	333	266	338
300	12	300	378	328	408

* Please contact us for other core materials and core structures.

If you would like a sheet gasket, please refer to P.30 Dimension Table 25.

Flange nominal pressure	Nominal flange diameter		shape	Core material symbol	Product thickness T	Core thickness t
	A	B				
JIS 10K	15 ~ 25	1/2 ~ 1	Type AS	7 (TOMBO No.1120)	2.3	1.5
JPI Class 150	40 ~ 300	1 1/2 ~ 12	Type A			

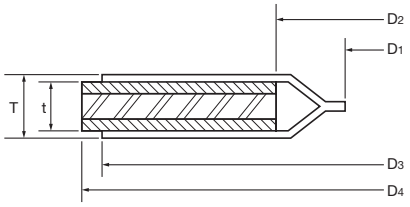
* Standard thickness of standard dimensions.

For glass lining

Applicable standard
This dimension table is set by NICHIAS based on the GL flange dimensions manufactured by AGC Technology Solutions Co., Ltd.

Applicable flange
GL Flange manufactured by AGC Technology Solutions Co., Ltd.

* Glass lining flanges may have different flange dimensions depending on the manufacturer. Please contact us if the flange is not applicable.
* The standard setting of the core of AGC Technology Solutions is TOMBO No.9010-A-5, 7-G.
* Please contact us for other core materials and core structures.



Type A

Dimension Table 36 JIS dimensions

(Unit: mm)

Nominal flange diameter		D_1	D_2	D_3	D_4
A	B				
20	3/4	19	29	61	63
25	1	25	35	72	74
40	1 1/2	38	48	87	89
50	2	50	60	102	104
65	2 1/2	65	75	122	124
80	3	77	87	132	134
100	4	103	113	157	159
150	6	153	163	219	220
200	8	201	211	269	270

Dimension Table 37 JPI dimensions

(Unit: mm)

Nominal flange diameter		D_1	D_2	D_3	D_4
A	B				
20	3/4	19	29	56	58
25	1	25	35	65	67.5
40	1 1/2	38	48	84	86.5
50	2	50	60	102	104.5
65	2 1/2	65	75	122	123.5
80	3	77	87	134	136.5
100	4	103	113	172	174.5
150	6	153	163	220	221.5
200	8	201	211	276	278.5

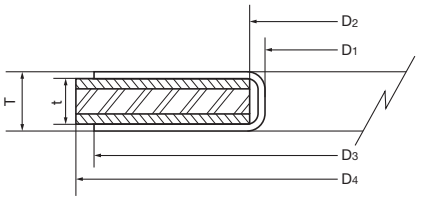
Flange nominal pressure	Nominal flange diameter		shape	Core material symbol	Product thickness T	Core thickness t
	A	B				
JIS pipe flange	20 ~ 200	3/4 ~ 8	Type A	3, 4, 5, 7 (Jointing sheet)	2.8	2.0
JPI pipe flange				6, 8 (Jointing sheet with felt)	3.2	2.4

* Standard thickness of standard dimensions.

For ASME/TAYLOR FORGE

Applicable standard
This dimension table is set by NICHIAS based on ASME B16.1-1998 and TAYLOR FORGE flange.

Applicable flange
ASME B16.1 2015 "Gray Iron Pipe Flanges And Flanged Fittings"
TAYLOR FORGE flange (Dimension table ☆ mark also applies to TAYLOR FORGE flange)



Type B

Dimension Table 38

(Unit: mm)

Nominal flange diameter		D_1	D_2	Class 125		Class 250	
A	B			D_3	D_4	D_3	D_4
650	26☆	673	677	767	775	824	832
700	28☆	724	728	824	832	887	895
750	30	775	779	875	889	945	952
800	32☆	826	830	932	940	1002	1010
850	34☆	876	880	983	991	1053	1060
900	36	927	931	1040	1048	1110	1118
950	38☆	978	982	1103	1111	1160	1168
1000	40☆	1029	1033	1154	1162	1218	1226
1050	42	1080	1084	1211	1219	1281	1289
1100	44☆	1130	1134	1268	1276	1338	1346
1150	46☆	1181	1185	1319	1327	1395	1403
1200	48	1232	1236	1376	1384	1484	1492
1250	50☆	1283	1287	1427	1435	—	—
1300	52☆	1334	1338	1484	1492	—	—
1350	54	1384	1388	1541	1549	—	—
1500	60	1537	1541	1707	1714	—	—
1650	66☆	1689	1693	1878	1886	—	—
1800	72	1842	1846	2043	2051	—	—
2100	84	2146	2150	2367	2375	—	—
2400	96	2451	2455	2691	2699	—	—

* Please contact us for other core materials and core structures.
* The ☆ mark also applies to TAYLOR FORGE flanges.

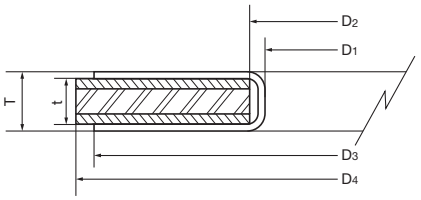
Nominal flange diameter		shape	Core material symbol	Product thickness T	Core thickness t
A	B				
650 ~ 900	26 ~ 36	Type B	3, 4, 5, 7 (Jointing sheet)	3.8	3.0
			6, 8 (Jointing sheet with felt)	3.2	2.4
950 ~ 2400	38 ~ 96		3, 4, 5, 7 (Jointing sheet)	3.8	3.0
			6, 8 (Jointing sheet with felt)	5.0	4.2

* Standard thickness of standard dimensions.

For MSS pipe flange

Applicable standard
This dimension table is set by NICHIAS based on MSS SP-44-1996.

Applicable flange
MSS SP-44-2016 "Steel Pipeline Flanges"



Type B

Dimension Table 39

(Unit: mm)

Nominal flange diameter		D_1	D_2	Class 150		Class 300	
A	B			D_3	D_4	D_3	D_4
650	26	673	677	749	775	749	835
700	28	724	728	800	832	800	899
750	30	775	779	857	883	857	952
800	32	826	830	914	940	914	1006
850	34	876	880	965	991	965	1057
900	36	927	931	1022	1048	1022	1118
950	38	978	982	1073	1111	1029	1054
1000	40	1029	1033	1124	1162	1086	1114
1050	42	1080	1084	1194	1219	1137	1165
1100	44	1130	1134	1245	1276	1194	1219
1150	46	1181	1185	1295	1327	1245	1273
1200	48	1232	1236	1359	1384	1302	1324
1250	50	1283	1287	1410	1435	1359	1378
1300	52	1334	1338	1460	1492	1410	1429
1350	54	1384	1388	1511	1549	1467	1492
1400	56	1435	1439	1575	1607	1518	1543
1450	58	1486	1490	1626	1664	1575	1594
1500	60	1537	1541	1676	1714	1626	1645

* Please contact us for other core materials and core structures.

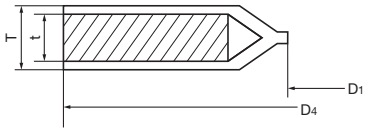
Nominal flange diameter		shape	Core material symbol	Product thickness T	Core thickness t
A	B				
650 ~ 900	26 ~ 36	Type B	3, 4, 5, 7 (Jointing sheet)	3.8	3.0
			6, 8 (Jointing sheet with felt)	3.2	2.4
950 ~ 1500	38 ~ 60		3, 4, 5, 7 (Jointing sheet)	3.8	3.0
			6, 8 (Jointing sheet with felt)	5.0	4.2

* Standard thickness of standard dimensions.

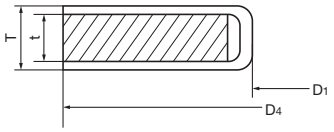
TOMBO™ No.9010-A-5-E

Applicable standard
This dimension table is set by NICHIAS based on JIS B 2220-2012.

Applicable flange
JIS B 2220-2012 "Steel pipe flanges"
JIS B 2239-2013 "Cast iron pipe flanges"
JIS B 2240-2006 "Copper alloy pipe flanges"
JIS B 2241-2006 "Aluminum alloy pipe flanges"



Type A



Type B

Dimension Table 40

(Unit: mm)

Nominal flange diameter		JIS 10K	
A	B	D_1	D_4
10	3/8	13	53
15	1/2	16	58
20	3/4	22	63
25	1	27	74
32	1 1/4	36	84
40	1 1/2	45	89
50	2	58	104
65	2 1/2	76	124
80	3	85	134
90	3 1/2	96	144
100	4	104	159
125	5	129	190
150	6	153	220
175	7	178	245
200	8	202	270
225	9	225	290
250	10	251	333
300	12	300	378
350	14	373	423
400	16	423	486
450	18	473	541
500	20	523	596
550	22	573	650
600	24	623	700
650	26	670	750
700	28	725	810
750	30	775	870
800	32	825	920
850	34	875	970
900	36	925	1020
1000	40	1030	1124
1100	44	1130	1234
1200	48	1230	1344
1350	54	1390	1498
1500	60	1545	1658

Nominal flange diameter		JIS 20K	
A	B	D_1	D_4
10	3/8	13	53
15	1/2	16	58
20	3/4	22	63
25	1	27	74
32	1 1/4	36	84
40	1 1/2	45	89
50	2	58	104
65	2 1/2	76	124
80	3	85	140
90	3 1/2	96	150
100	4	104	165
125	5	129	203
150	6	153	238
200	8	202	283
250	10	280	356
300	12	320	406
350	14	373	450
400	16	423	510
450	18	473	575
500	20	523	630
550	22	573	684
600	24	623	734
650	26	670	805
700	28	725	855
750	30	775	918
800	32	825	978
850	34	875	1038
900	36	925	1088

* Gasket dimensions are standard dimensions. If there is a possibility of flow problems due to scale in the fluid, please contact us and we will manufacture gaskets with special dimensions.

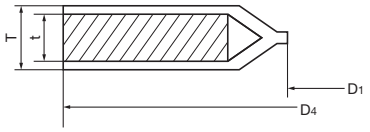
	Nominal flange diameter		shape	Core material symbol	Product thickness T	Core thickness t
	A	B				
JIS 10K JIS 20K	10 ~ 40	3/8 ~ 1 1/2	Type A	5 (TOMBO No.1995)	2.5	1.5
	50 ~ 600	2 ~ 24			3.0	2.0
	650 ~ 1500	26 ~ 60	Type B		3.8	3.0

* Standard thickness of standard dimensions.

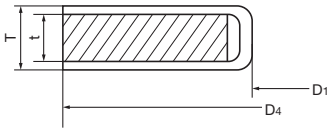
TOMBO™ No.9010-A-5-E

Applicable standard
This dimension table is set by NICHIAS based on JPI-7S-15-2011 and ASME B16.5 2017.

Applicable flange
JPI-7S-15-2011 "Forged Steel Flanges for the Petroleum Industry"
ASME B16.5 2017 "Pipe Flanges and Flanged Fittings"



Type A



Type B

Dimension Table 41

(Unit: mm)

Nominal flange diameter		Class 150		Class 300	
A	B	D_1	D_4	D_1	D_4
15	1/2	16	47	16	53
20	3/4	21	57	21	66
25	1	27	66	27	72
32	1 1/4	36	76	36	82
40	1 1/2	41	85	41	95
50	2	53	103	53	110
65	2 1/2	62	122	62	129
80	3	74	135	74	148
90	3 1/2	86	161	86	164
100	4	98	173	98	180
125	5	123	196	123	215
150	6	147	221	147	250
200	8	196	277	196	306
250	10	245	338	245	360
300	12	295	408	295	420
350	14	336	449	336	484
400	16	387	512	387	538
450	18	437	547	437	595
500	20	485	604	485	651
550	22	578	660	578	705
600	24	587	715	587	772

Nominal flange diameter		Class 150 (Series A)		Class 300 (Series A)	
A	B	D_1	D_4	D_1	D_4
650	26	673	775	673	835
700	28	724	832	725	899
750	30	775	883	774	952
800	32	826	940	826	1006
850	34	876	991	876	1057
900	36	927	1048	927	1118
950	38	978	1111	978	1054
1000	40	1029	1162	1029	1114
1050	42	1080	1219	1080	1165
1100	44	1130	1276	1130	1219
1150	46	1181	1327	1181	1273
1200	48	1232	1384	1232	1324
1250	50	1283	1435	1283	1378
1300	52	1334	1492	1334	1429
1350	54	1384	1549	1384	1492
1400	56	1435	1607	1435	1543
1450	58	1485	1664	1486	1594
1500	60	1537	1714	1537	1645

* Gasket dimensions are the same as the inner diameter of the pipe when using STPG sch40 steel pipes up to 12B and STPG sch20 steel pipes for 14B and above, but the inner diameter is reduced by 4 mm.

	Nominal flange diameter		shape	Core material symbol	Product thickness T	Core thickness t
	A	B				
Class 150 Class 300	15 ~ 40	1/2 ~ 1 1/2	Type A	5 (TOMBO No.1995)	2.5	1.5
	50 ~ 600	2 ~ 24			3.0	2.0
	650 ~ 1500	26 ~ 60	Type B		3.8	3.0

* Standard thickness of standard dimensions.

VORTEX™ Gaskets

Applicable gaskets

- TOMBO™ No.1834R-NA series
- TOMBO™ No.1834R-GR series
- TOMBO™ No.1836R-GM / GS / GH series
- TOMBO™ No.1838R-NM series
- TOMBO™ No.9090-IOR series

JIS B 2404-2018 version

Applicable standard
JIS B 2404-2018 "Dimensions of gaskets for use with pipe flanges"
* The inner diameter of the inner ring with a nominal pressure of 10K is set by NICHIAS.

Applicable flange
JIS B 2220-2012 "Steel pipe flange"
JIS B 2239-2013 "Cast iron pipe flange"

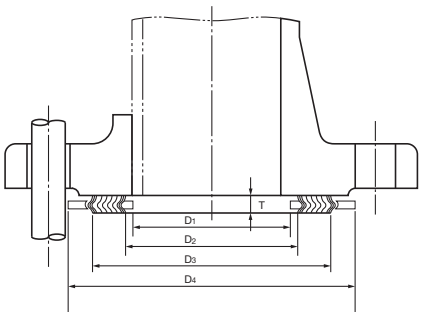
Dimension Table 42

(Unit: mm)

Nominal flange diameter		10K				16K				20K			
A	B	Inner ring I.D D_1	Inner diameter D_2	Outer diameter D_3	Outer ring O.D D_4	Inner ring I.D D_1	Inner diameter D_2	Outer diameter D_3	Outer ring O.D D_4	Inner ring I.D D_1	Inner diameter D_2	Outer diameter D_3	Outer ring O.D D_4
10	3/8	18	24	37	52	18	24	37	52	18	24	37	52
15	1/2	22	28	41	57	22	28	41	57	22	28	41	57
20	3/4	28	34	47	62	28	34	47	62	28	34	47	62
25	1	34	40	53	74	34	40	53	74	34	40	53	74
32	1 1/4	43	51	67	84	43	51	67	84	43	51	67	84
40	1 1/2	49	57	73	89	49	57	73	89	49	57	73	89
50	2	61	69	89	104	61	69	89	104	61	69	89	104
65	2 1/2	77	87	107	124	77	87	107	124	77	87	107	124
80	3	88	98	118	134	89	99	119	140	89	99	119	140
90	3 1/2	98	110	130	144	102	114	139	150	102	114	139	150
100	4	111	123	143	159	115	127	152	165	115	127	152	165
125	5	136	148	173	190	140	152	177	202	140	152	177	202
150	6	158	174	199	220	166	182	214	237	166	182	214	237
175	7	185	201	226	245	—	—	—	—	—	—	—	—
200	8	211	227	252	270	217	233	265	282	217	233	265	282
225	9	236	252	277	290	—	—	—	—	—	—	—	—
250	10	258	278	310	332	268	288	328	354	268	288	328	354
300	12	309	329	361	377	319	339	379	404	319	339	379	404
350	14	346	366	406	422	356	376	416	450	356	376	416	450
400	16	392	417	457	484	407	432	482	508	407	432	482	508
450	18	443	468	518	539	458	483	533	573	458	483	533	573
500	20	493	518	568	594	508	533	583	628	508	533	583	628
550	22	544	569	619	650	559	584	634	684	559	584	634	684
600	24	595	620	670	700	610	635	685	734	610	635	685	734

* The gasket shape of the GRASEAL VORTEX gasket and NAFLON VORTEX gasket should be with inner and outer rings. We recommend that the flange for nominal pressure 63K be equipped with inner and outer rings regardless of the type of VORTEX gasket.
* We do not recommend using VORTEX gaskets for flanges with nominal pressures of 2K and 5K.
* For bolts, we recommend high-strength alloy steel of SNB-7 or higher.

When using a gasket with a pressure class and flange nominal diameter inside a bold border for a slip-on welding type (insertion welding type) flange, please use the dimensions on page 50.



* The outer diameter of the main body is the size of the gasket shoulder, not including the spring layers

(Unit: mm)

Nominal flange diameter		30K				40K				63K			
A	B	Inner ring I.D D_1	Inner diameter D_2	Outer diameter D_3	Outer ring O.D D_4	Inner ring I.D D_1	Inner diameter D_2	Outer diameter D_3	Outer ring O.D D_4	Inner ring I.D D_1	Inner diameter D_2	Outer diameter D_3	Outer ring O.D D_4
10	3/8	18	24	37	59	15	21	34	59	15	21	34	64
15	1/2	22	28	41	64	18	24	37	64	18	24	37	69
20	3/4	28	34	47	69	23	29	42	69	23	29	42	75
25	1	34	40	53	79	29	35	48	79	29	35	48	80
32	1 1/4	43	51	67	89	38	44	60	89	38	44	60	90
40	1 1/2	49	57	73	100	43	51	67	100	43	51	67	107
50	2	61	69	89	114	55	63	79	114	55	63	79	125
65	2 1/2	68	78	98	140	68	78	98	140	68	78	98	152
80	3	80	90	110	150	80	90	110	150	80	90	110	162
90	3 1/2	92	102	127	162	92	102	127	162	92	102	127	179
100	4	104	116	141	172	104	116	141	182	104	116	141	194
125	5	128	140	165	207	128	140	165	224	128	140	165	235
150	6	153	165	197	249	153	165	197	265	153	165	197	275
175	7	—	—	—	—	—	—	—	—	—	—	—	—
200	8	202	218	250	294	202	218	250	315	202	218	250	328
225	9	—	—	—	—	—	—	—	—	—	—	—	—
250	10	251	271	311	360	251	271	311	378	251	271	311	394
300	12	300	320	360	418	300	320	360	434	300	320	360	446
350	14	336	356	396	463	336	356	396	479	336	356	396	488
400	16	383	403	453	524	383	403	453	531	383	403	453	545
450	18	—	—	—	—	—	—	—	—	—	—	—	—
500	20	—	—	—	—	—	—	—	—	—	—	—	—
550	22	—	—	—	—	—	—	—	—	—	—	—	—
600	24	—	—	—	—	—	—	—	—	—	—	—	—

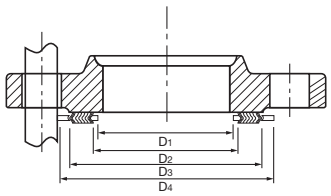
Types of gasket seats to apply

	Flange nominal pressure					
	10K	16K	20K	30K	40K	63K
50A (2B) or below	Large raised face only (Cannot be used for small raised face)				Small raised face / large raised face (However, butt weld flange size 65A (21 / 2B) or above and Slip-on welding type flange C type only)	
65A (2-1/2B) or above						

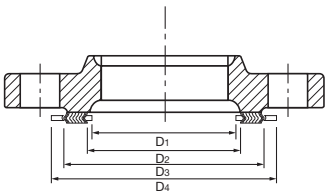
For slip-on welded flanges (for plug-in welded flanges)

Applicable standard
This dimension table is set by NICHIAS based on JIS B 2220-2012.

Applicable flange
JIS B 2220-2012 "Steel pipe flanges"



Slip-on welded flange A type



Slip-on welded flange B type

Dimension Table 43

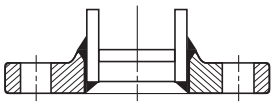
(Unit: mm)

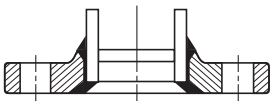
Nominal flange diameter		Slip-on welded flange A type				Slip-on welded flange B type							
		30K				20K				30K			
A	B	Inner ring I.D D_1	I.D D_2	O.D D_3	Outer ring O.D D_4	Inner ring I.D D_1	I.D D_2	O.D D_3	Outer ring O.D D_4	Inner ring I.D D_1	I.D D_2	O.D D_3	Outer ring O.D D_4
10	3/8	21.0	29.0	42.0	59.0	23.0	29.0	39.0	52.0	30.0	36.0	46.0	59.0
15	1/2	25.0	32.0	45.0	64.0	27.0	33.0	43.0	57.0	36.0	42.0	52.0	64.0
20	3/4	30.5	37.0	50.0	69.0	33.0	39.0	49.0	62.0	40.0	46.0	56.0	69.0
25	1	37.5	47.0	60.0	79.0	38.0	46.0	59.0	74.0	46.0	54.0	67.0	79.0
32	1 1/4	46.0	54.0	70.0	89.0	47.0	55.0	68.0	84.0	54.0	62.0	75.0	89.0
40	1 1/2	52.0	64.0	80.0	100.0	53.0	61.0	74.0	89.0	60.0	68.0	81.0	100.0
50	2	64.0	75.0	95.0	114.0	64.0	74.0	90.0	104.0	70.0	80.0	96.0	114.0
65	2 1/2	80.0	100.0	120.0	140.0	—	—	—	—	—	—	—	—
80	3	93.0	110.0	130.0	150.0	—	—	—	—	—	—	—	—
90	3 1/2	105.5	120.0	140.0	163.0	—	—	—	—	—	—	—	—
100	4	118.5	130.0	150.0	173.0	—	—	—	—	—	—	—	—
125	5	146.0	160.0	185.0	208.0	—	—	—	—	—	—	—	—
150	6	171.5	190.0	220.0	251.0	—	—	—	—	—	—	—	—
200	8	223.0	235.0	265.0	296.0	—	—	—	—	—	—	—	—
250	10	274.0	290.0	330.0	360.0	—	—	—	—	—	—	—	—
300	12	326.0	350.0	390.0	420.0	—	—	—	—	—	—	—	—
350	14	363.0	395.0	435.0	465.0	—	—	—	—	—	—	—	—
400	16	414.0	445.0	495.0	524.0	—	—	—	—	—	—	—	—

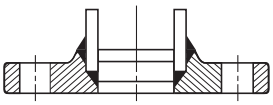
* For bolts, we recommend high-strength alloy steel of SNB-7 or higher.
* The outer diameter of the gasket body is the size of the gasket shoulder, not including the spring layers.

Information

For slip-on welded flanges, a pipe is inserted into the flange and the upper part of the flange and the inside of the inner diameter are welded and contacted.
JIS 20K and 30K flanges are available in A, B, and C types as shown in the figure below. (The figure shows the hub flange)


type A

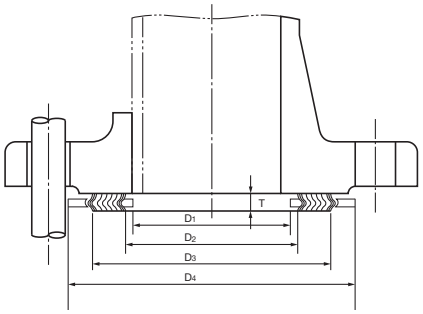

type B


type C

JIS B 2220 for large diameter flanges

Applicable standard
This dimension table is set by NICHIAS based on JIS B 2220-2012.

Applicable flange
JIS B 2220-2012 "Steel pipe flanges"



* The outer diameter of the gasket with inner and outer rings is the dimension of the gasket shoulder, not including the spring layers.

Dimension Table 44

(Unit: mm)

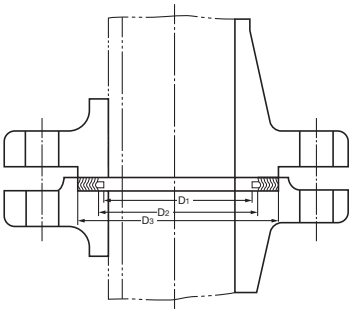
Nominal flange diameter		Nominal pressure 10K				16K				20K			
A	B	Inner ring I.D D_1	I.D D_2	O.D D_3	Outer ring O.D D_4	Inner ring I.D D_1	I.D D_2	O.D D_3	Outer ring O.D D_4	Inner ring I.D D_1	I.D D_2	O.D D_3	Outer ring O.D D_4
650	26	650	675	725	750	674	699	749	784	695	720	770	805
700	28	701	726	776	810	716	741	791	836	740	765	815	855
750	30	752	777	827	870	777	802	852	896	799	824	874	918
800	32	803	828	878	920	831	856	906	945	865	881	931	978
850	34	854	879	929	970	880	905	955	995	919	944	994	1038
900	36	904	929	979	1020	934	959	1009	1045	971	996	1046	1088
1000	40	1006	1036	1086	1124	1030	1060	1110	1158	—	—	—	—
1100	44	1108	1138	1188	1234	1132	1162	1212	1258	—	—	—	—
1200	48	1209	1239	1289	1344	1240	1270	1320	1368	—	—	—	—
1300	52	—	—	—	—	1341	1371	1421	1474	—	—	—	—
1350	54	1362	1392	1442	1498	1403	1433	1483	1534	—	—	—	—
1400	56	—	—	—	—	1453	1483	1533	1584	—	—	—	—
1500	60	1514	1544	1594	1658	1559	1589	1639	1694	—	—	—	—

* For bolts, we recommend high-strength alloy steel of SNB-7 or higher.

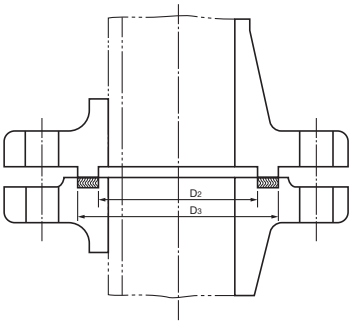
For male & female flanges and tongue & groove flanges

Applicable standard
JIS B 2404-2018 "Dimensions of gaskets for use with pipe flanges"
* Dimensions with a flange nominal diameter of 450A or more are set by NICHIAS.

Applicable flange
JIS B 2220-2012 "Steel pipe flanges"



male & female type



Tongue & groove type

Dimension Table 45

(Unit: mm)

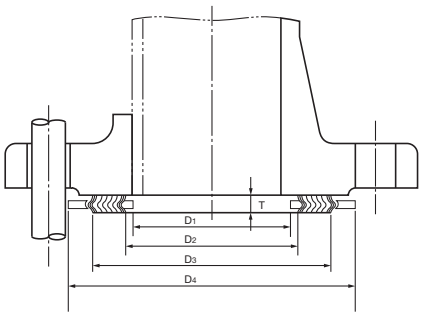
Nominal flange diameter		Male & female type			Tongue & groove type	
A	B	Inner ring I.D D_1	I.D D_2	O.D D_3	I.D D_2	O.D D_3
10	3/8	19	25	38	28	38
15	1/2	23	29	42	32	42
20	3/4	31	37	50	38	50
25	1	38	44	60	45	60
32	1 1/4	46	54	70	55	70
40	1 1/2	51	59	75	60	75
50	2	62	70	90	70	90
65	2 1/2	80	90	110	90	110
80	3	90	100	120	100	120
90	3 1/2	100	110	130	110	130
100	4	113	125	145	125	145
125	5	138	150	175	150	175
150	6	171	187	215 (212)	190 (187)	215 (212)
200	8	215	231	259	230	259
250	10	268	288	324	296	324
300	12	318	338	374 (364)	341	374 (369)
350	14	356	376	414	381	414
400	16	409	434	474	441	474
450	18	457	482	522	484	522
500	20	509	534	574	536	574
550	22	559	584	624	586	624
600	24	609	634	674	636	674

* When using a VORTEX gasket with an inner ring for a slip-on welded flange, please note that the inner ring inner diameter protrudes from the flange inner diameter.
* For bolts, we recommend high-strength alloy steel of SNB-7 or higher.
* Dimensions in parentheses apply only to flanges with a nominal pressure of 10K.

Gasket for safety valve JIS B 8210-2017 version

Applicable standard
This dimension table is set by NICHIAS based on JIS B 8210-2017.

Applicable flange
JIS B 8210-2017 "Safety devices for protection against excessive pressure - Safety valves"



Dimension table 46 for full bore type safety valve

(Unit: mm)

Nominal flange diameter		Nominal pressure 10K				16K				20K				30K				40K			
A	B	Inner ring I.D D_1	I.D D_2	O.D D_3	Outer ring O.D D_4	Inner ring I.D D_1	I.D D_2	O.D D_3	Outer ring O.D D_4	Inner ring I.D D_1	I.D D_2	O.D D_3	Outer ring O.D D_4	Inner ring I.D D_1	I.D D_2	O.D D_3	Outer ring O.D D_4	Inner ring I.D D_1	I.D D_2	O.D D_3	Outer ring O.D D_4
20	3/4	35	41	54	74	35	41	54	74	34	44	57	79	34	44	57	79	34	44	57	80
25	1	44	50	63	84	44	50	63	84	44	54	67	89	44	54	67	89	44	54	67	90
32	1 1/4	44	52	68	89	44	52	68	89	49	61	77	100	49	61	77	100	49	61	77	108
40	1 1/2	59	67	83	104	59	67	83	104	62	74	90	114	62	74	90	114	62	74	90	125
50	2	75	83	103	124	75	83	103	124	83	95	115	140	83	95	115	140	83	95	115	153
65	2 1/2	87	97	117	140	87	97	117	140	84	100	120	150	84	100	120	150	84	100	120	163
80	3	98	110	130	150	98	110	130	150	94	110	130	163	94	110	130	163	94	110	130	181
90	3 1/2	108	120	145	165	108	120	145	165	99	115	140	173	104	120	145	183	104	120	145	196
100	4	143	155	180	203	143	155	180	203	134	150	175	208	135	155	180	226	135	155	180	235
125	5	174	190	215	238	174	190	215	238	170	190	215	251	175	195	220	265	175	195	220	275
150	6	207	223	255	283	207	223	255	283	203	223	255	296	208	233	265	315	208	233	265	330
200	8	277	293	325	356	277	293	325	356	268	288	320	360	268	298	330	380	268	298	330	394

* For bolts, we recommend high-strength alloy steel of SNB-7 or higher.
* The outer diameter of the gasket body is the size of the gasket shoulder, not including the spring layers.

Gasket for safety valve JIS B 8210-1986 version

Applicable standard
This dimension table is set by NICHIAS based on JIS B 8210-1986.

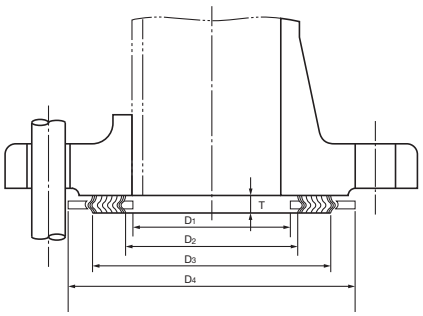
Applicable flange
JIS B 8210-1986 "Safety devices for protection against excessive pressure - Safety valves"

Dimension table 47 lift type safety valve

(Unit: mm)

Nominal flange diameter		Nominal pressure 10K				20K				30K				45K				65K			
A	B	Inner ring I.D D_1	I.D D_2	O.D D_3	Outer ring O.D D_4	Inner ring I.D D_1	I.D D_2	O.D D_3	Outer ring O.D D_4	Inner ring I.D D_1	I.D D_2	O.D D_3	Outer ring O.D D_4	Inner ring I.D D_1	I.D D_2	O.D D_3	Outer ring O.D D_4	Inner ring I.D D_1	I.D D_2	O.D D_3	Outer ring O.D D_4
20	3/4	26	32	45	63	38	44	57	74	34	44	57	79	34	44	57	79	24	34	47	80
25	1	38	44	57	74	43	49	62	79	39	49	62	84	39	49	62	84	29	39	52	90
32	1 1/4	43	51	67	84	48	56	72	89	49	61	77	100	49	61	77	100	34	46	62	108
40	1 1/2	48	56	72	89	63	71	87	104	62	74	90	114	62	74	90	114	47	59	75	125
50	2	59	67	87	104	69	77	97	114	68	80	100	125	68	80	100	125	53	65	85	138
65	2 1/2	75	85	105	124	90	100	120	140	84	100	120	150	84	100	120	150	71	85	105	163
80	3	93	105	125	144	98	110	130	150	94	110	130	163	94	110	130	163	81	95	115	181
90	3 1/2	108	120	140	159	108	120	145	165	99	115	140	173	104	120	145	183	91	105	130	196
100	4	128	140	160	179	128	140	165	185	124	140	165	198	125	145	170	211	109	125	150	220
115	4 1/2	134	150	170	190	139	155	180	203	130	150	175	208	135	155	180	226	119	135	160	235
125	5	139	155	180	200	149	165	190	213	145	165	190	223	150	170	195	241	130	150	175	245
150	6	179	195	220	245	182	198	230	258	183	203	235	276	183	208	240	285	153	178	210	305
200	8	224	240	265	290	232	248	280	311	233	253	285	320	228	258	290	340	203	228	260	354

* For bolts, we recommend high-strength alloy steel of SNB-7 or higher.



* The outer diameter of the gasket body is the size of the gasket shoulder, not including the spring layers.

Dimension table 48 for full bore type safety valve

(Unit: mm)

Nominal flange diameter		Nominal pressure 10K				20K				30K				45K				65K			
A	B	Inner ring I.D D_1	I.D D_2	O.D D_3	Outer ring O.D D_4	Inner ring I.D D_1	I.D D_2	O.D D_3	Outer ring O.D D_4	Inner ring I.D D_1	I.D D_2	O.D D_3	Outer ring O.D D_4	Inner ring I.D D_1	I.D D_2	O.D D_3	Outer ring O.D D_4	Inner ring I.D D_1	I.D D_2	O.D D_3	Outer ring O.D D_4
20	3/4	38	44	57	74	34	44	57	79	34	44	57	79	24	34	47	80	20	30	43	79
25	1	43	49	62	79	39	49	62	84	39	49	62	84	29	39	52	90	27	37	50	89
32	1 1/4	48	56	72	89	49	61	77	100	49	61	77	100	34	46	62	108	32	44	60	100
40	1 1/2	63	71	87	104	62	74	90	114	62	74	90	114	47	59	75	125	49	61	77	143
50	2	69	77	97	114	68	80	100	125	68	80	100	125	53	65	85	138	58	70	90	166
65	2 1/2	90	100	120	140	84	100	120	150	84	100	120	150	71	85	105	163	71	87	107	173
80	3	98	110	130	150	94	110	130	163	94	110	130	163	81	95	115	181	96	112	137	211
90	3 1/2	108	120	145	165	99	115	140	173	104	120	145	183	91	105	130	196	96	112	137	211
100	4	128	140	165	185	124	140	165	198	125	145	170	211	109	125	150	220	121	141	166	256
115	4 1/2	139	155	180	203	130	150	175	208	135	155	180	226	119	135	160	235	121	141	166	256
125	5	149	165	190	213	145	165	190	223	150	170	195	241	130	150	175	245	151	171	196	281
150	6	182	198	230	258	183	203	235	276	183	208	240	285	153	178	210	305	188	213	245	351
200	8	232	248	280	311	233	253	285	320	228	258	290	337	203	228	260	354	237	267	299	434

JPI-7S-41-2018 Version

Applicable standard
JPI-7S-41-2018 "Spiral wound gaskets for petroleum industry"

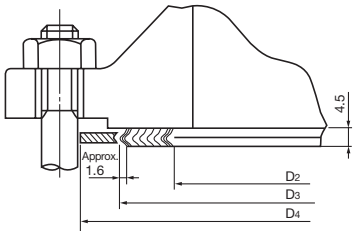
Applicable flange
JPI-7S-15-2011 "Pipe Flanges for the Petroleum Industry"
ASME B16.5 2017 "Pipe Flanges and Flanged Fittings"

Dimension Table 49

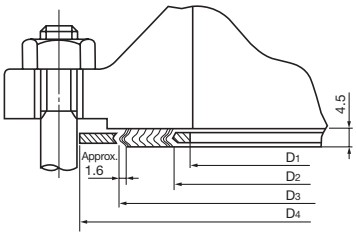
(Unit: mm)

Nominal flange diameter		Class 150				Class 300				Class 400				Class 600			
A	B	Inner ring I.D D_1	Body I.D D_2	Body O.D D_3	Outer ring O.D D_4	Inner ring I.D D_1	Body I.D D_2	Body O.D D_3	Outer ring O.D D_4	Inner ring I.D D_1	Body I.D D_2	Body O.D D_3	Outer ring O.D D_4	Inner ring I.D D_1	Body I.D D_2	Body O.D D_3	Outer ring O.D D_4
15	1/2	14.2	19.1	31.8	47.8	14.2	19.1	31.8	54.1	14.2	19.1	31.8	54.1	14.2	19.1	31.8	54.1
20	3/4	20.6	25.4	39.6	57.2	20.6	25.4	39.6	66.8	20.6	25.4	39.6	66.8	20.6	25.4	39.6	66.8
25	1	26.9	31.8	47.8	66.8	26.9	31.8	47.8	73.2	26.9	31.8	47.8	73.2	26.9	31.8	47.8	73.2
32	(1 1/4)	38.1	47.8	60.5	76.2	38.1	47.8	60.5	82.6	38.1	47.8	60.5	82.6	38.1	47.8	60.5	82.6
40	1 1/2	44.5	54.1	69.9	85.9	44.5	54.1	69.9	95.3	44.5	54.1	69.9	95.3	44.5	54.1	69.9	95.3
50	2	55.6	69.9	85.9	104.9	55.6	69.9	85.9	111.3	55.6	69.9	85.9	111.3	55.6	69.9	85.9	111.3
65	2 1/2	66.5	82.6	98.6	124.0	66.5	82.6	98.6	130.3	66.5	82.6	98.6	130.3	66.5	82.6	98.6	130.3
80	3	81.0	101.6	120.7	136.7	81.0	101.6	120.7	149.4	81.0	101.6	120.7	149.4	81.0	101.6	120.7	149.4
(90)	(3 1/2)	93.7	114.3	133.3	161.9	93.7	114.3	133.3	165.1	93.7	114.3	133.3	161.9	93.7	114.3	133.3	161.9
100	4	106.4	127.0	149.4	174.8	106.4	127.0	149.4	181.1	102.6	120.7	149.4	177.8	102.6	120.7	149.4	193.8
(125)	(5)	131.8	155.7	177.8	196.9	131.8	155.7	177.8	215.9	128.3	147.6	177.8	212.9	128.3	147.6	177.8	241.3
150	6	157.2	182.6	209.6	222.3	157.2	182.6	209.6	251.0	154.9	174.8	209.6	247.7	154.9	174.8	209.6	266.7
200	8	215.9	233.4	263.7	279.4	215.9	233.4	263.7	308.1	205.7	225.6	263.7	304.8	205.7	225.6	263.7	320.8
250	10	268.2	287.3	317.5	339.9	268.2	287.3	317.5	362.0	255.3	274.6	317.5	358.9	255.3	274.6	317.5	400.1
300	12	317.5	339.9	374.7	409.7	317.5	339.9	374.7	422.4	307.3	327.2	374.7	419.1	307.3	327.2	374.7	457.2
350	14	349.3	371.6	406.4	450.9	349.3	371.6	406.4	485.9	342.9	362.0	406.4	482.6	342.9	362.0	406.4	492.3
400	16	400.1	422.4	463.6	514.4	400.1	422.4	463.6	539.8	389.9	412.8	463.6	536.7	389.9	412.8	463.6	565.2
450	18	449.3	474.7	527.1	549.4	449.3	474.7	527.1	596.9	438.2	469.9	527.1	593.9	438.2	469.9	527.1	612.9
500	20	500.1	525.5	577.9	606.6	500.1	525.5	577.9	654.1	489.0	520.7	577.9	647.7	489.0	520.7	577.9	682.8
550	22	552.4	577.8	635.0	659.2	552.4	577.8	635.0	704.0	552.4	577.8	635.0	701.0	552.4	577.8	635.0	732.7
600	24	603.3	628.7	685.8	717.6	603.3	628.7	685.8	774.7	590.6	628.7	685.8	768.4	590.6	628.7	685.8	790.7

* When using for a slip-on welded flange, please note that the inner ring inner diameter may protrude from the flange inner diameter. We recommend using a butt weld flange.
* ☐ Use the dimension inside of the bold border for butt-welded flanges or socket-welded flanges. It cannot be used for slip-on welded flanges.
* When using for a nominal pressure of class 900 or higher, use a butt welded flange. We also recommend using inner and outer rings.
* For bolts, we recommend high-strength alloy steel of SNB-7 or higher.
* The flange nominal diameter in ( ) should not be used as much as possible.



With outer ring



With inner and outer ring

* The O.D. of the main body is the dimension of the convex part excluding spring layers.

(Unit: mm)

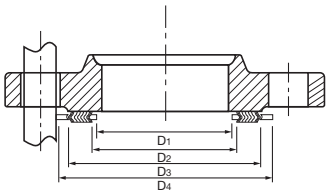
Nominal flange diameter		Class 900				Class 1500				Class 2500			
A	B	Inner ring I.D D_1	Body I.D D_2	Body O.D D_3	Outer ring O.D D_4	Inner ring I.D D_1	Body I.D D_2	Body O.D D_3	Outer ring O.D D_4	Inner ring I.D D_1	Body I.D D_2	Body O.D D_3	Outer ring O.D D_4
15	1/2	14.2	19.1	31.8	63.5	14.2	19.1	31.8	63.5	14.2	19.1	31.8	69.9
20	3/4	20.6	25.4	39.6	69.9	20.6	25.4	39.6	69.9	20.6	25.4	39.6	76.2
25	1	26.9	31.8	47.8	79.5	26.9	31.8	47.8	79.5	26.9	31.8	47.8	85.9
(32)	(1 1/4)	33.3	39.6	60.5	88.9	33.3	39.6	60.5	88.9	33.3	39.6	60.5	104.9
40	1 1/2	41.4	47.8	69.9	98.6	41.4	47.8	69.9	98.6	41.4	47.8	69.9	117.6
50	2	52.3	58.7	85.9	143.0	52.3	58.7	85.9	143.0	52.3	58.7	85.9	146.1
65	2 1/2	63.5	69.9	98.6	165.1	63.5	69.9	98.6	165.1	63.5	69.9	98.6	168.4
80	3	78.7	95.3	120.7	168.4	78.7	92.2	120.7	174.8	78.7	92.2	120.7	196.9
(90)	(3 1/2)	—	—	—	—	—	—	—	—	—	—	—	—
100	4	102.6	120.7	149.4	206.5	97.8	117.6	149.4	209.6	97.8	117.6	149.4	235.0
(125)	(5)	128.3	147.6	177.8	247.7	124.5	143.0	177.8	254.0	124.5	143.0	177.8	279.4
150	6	154.9	174.8	209.6	289.1	147.3	171.5	209.6	282.7	147.3	171.5	209.6	317.5
200	8	196.9	222.3	257.3	358.9	196.9	215.9	257.3	352.6	196.9	215.9	257.3	387.4
250	10	246.1	276.4	311.2	435.1	246.1	266.7	311.2	435.1	246.1	270.0	311.2	476.3
300	12	292.1	323.9	368.3	498.6	292.1	323.9	368.3	520.7	292.1	317.5	368.3	549.4
350	14	320.8	355.6	400.1	520.7	320.8	362.0	400.1	577.9	—	—	—	—
400	16	374.7	412.8	457.2	574.8	368.3	406.4	457.2	641.4	—	—	—	—
450	18	425.5	463.6	520.7	638.3	425.5	463.6	520.7	704.9	—	—	—	—
500	20	482.6	520.7	571.5	698.5	476.3	514.4	571.5	755.7	—	—	—	—
600	24	590.6	628.7	679.5	838.2	577.9	616.0	679.5	901.7	—	—	—	—

When using a pressure class / flange nominal diameter gasket in a bold border for a slip-on welding type (insertion welding type) flange, Please use the dimensions on page 58.

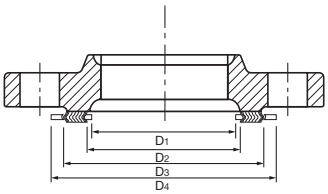
For slip-on welded flanges (for plug-in welded flanges)

Applicable standard
This dimension table was set by us based on JPI-7S-15-2011.

Applicable flange
JPI-7S-15-2011 "Pipe Flanges for the Petroleum Industry"
ASME B16.5-2017 "Pipe Flanges and Flanged Fittings"



Slip-on welded flange A type



Slip-on welded flange B type

Dimension Table 50

(Unit: mm)

Nominal flange diameter		Class 150				Class 300, 400, 600				Class 900				Class 1500			
A	B	Inner ring I.D D_1	Body I.D D_2	Body O.D D_3	Outer ring O.D D_4	Inner ring I.D D_1	Body I.D D_2	Body O.D D_3	Outer ring O.D D_4	Inner ring I.D D_1	Body I.D D_2	Body O.D D_3	Outer ring O.D D_4	Inner ring I.D D_1	Body I.D D_2	Body O.D D_3	Outer ring O.D D_4
15	1/2	18.2	24.2	34.9	49.1	18.2	24.2	34.9	55.5	18.2	24.2	34.9	65.0	18.2	24.2	34.9	65.0
20	3/4	23.0	29.7	42.9	58.7	23.0	29.7	42.9	68.1	23.0	29.7	42.9	71.4	23.0	29.7	42.9	71.4
25	1	30.0	36.5	50.8	68.2	30.0	36.5	50.8	74.5	30.0	36.5	50.8	80.9	30.0	36.5	50.8	80.9
(32)	(1 1/4)	—	—	—	—	—	—	—	—	33.3	46.0	63.5	90.4	33.3	46.0	63.5	90.4
40	1 1/2	—	—	—	—	—	—	—	—	41.4	50.8	73.2	100.1	41.4	50.8	73.2	100.1
50	2	—	—	—	—	—	—	—	—	52.3	63.5	91.9	144.5	52.3	63.5	91.9	144.5
65	2 1/2	—	—	—	—	—	—	—	—	63.5	79.5	104.6	166.6	63.5	79.5	104.6	166.6
350	14	—	—	—	—	—	—	—	—	342.9	363.0	400.0	520.7	—	—	—	—

* The dimension symbol "SL" is displayed on the VORTEX gasket for slip-on welded flanges. Example: SL JPI 150 ~ 1/2
* For bolts, we recommend high-strength alloy steel of SNB-7 or higher.
* The outer diameter of the gasket body is the dimension of the mountain (convex part) that does not include the spring layers.
* The flange nominal diameter in ( ) should not be used as much as possible.

JPI-7S-41-1998 Version

Applicable standard
JPI-7S-41-1998 "Spiral wound gaskets for petroleum industry"

Dimension Table 51

(Unit: mm)

Nominal flange diameter		Class 400				Class 600			
A	B	Inner ring I.D D_1	Body I.D D_2	Body O.D D_3	Outer ring O.D D_4	Inner ring I.D D_1	Body I.D D_2	Body O.D D_3	Outer ring O.D D_4
100	4	[106.4]	120.6	149.4	177.8	[106.4]	120.6	149.4	193.8
(125)	(5)	[131.8]	147.6	177.8	212.9	[131.8]	147.6	177.8	241.3
150	6	[157.2]	174.8	209.6	247.6	[157.2]	174.8	209.6	266.7
200	8	[209.6]	225.6	263.7	304.8	[209.6]	225.6	263.7	320.8
250	10	[260.4]	274.6	317.5	358.9	[260.4]	274.6	317.5	400.0
300	12	[317.5]	327.2	374.6	419.1	[317.5]	327.2	374.6	457.2
350	14	[349.2]	362.0	406.4	482.6	[349.2]	362.0	406.4	492.3
400	16	[400.0]	412.8	463.6	536.7	[400.0]	412.8	463.6	565.2
450	18	[449.3]	469.9	527.0	593.9	[449.3]	469.9	527.0	612.9
500	20	[500.1]	520.7	577.8	647.7	[500.1]	520.7	577.8	682.8
550	22	[552.4]	577.8	635.0	701.8	[552.4]	577.8	635.0	733.6
600	24	[603.2]	628.6	685.8	768.4	[603.2]	628.6	685.8	790.7

Nominal flange diameter		Class 900				Class 1500				Class 2500			
A	B	Inner ring I.D D_1	Body I.D D_2	Body O.D D_3	Outer ring O.D D_4	Inner ring I.D D_1	Body I.D D_2	Body O.D D_3	Outer ring O.D D_4	Inner ring I.D D_1	Body I.D D_2	Body O.D D_3	Outer ring O.D D_4
80	3	[81.0]	95.2	120.6	168.4	[81.0]	92.2	120.6	174.8	[81.0]	92.2	120.6	196.8
(90)	($3\frac{1}{2}$)	—	—	—	—	—	—	—	—	—	—	—	—
100	4	[106.4]	120.6	149.4	206.5	[106.4]	117.6	149.4	209.6	[106.4]	117.6	149.4	235.0
(125)	(5)	[131.8]	147.6	177.8	247.6	[131.8]	143.0	177.8	254.0	[131.8]	143.0	177.8	279.4
150	6	[157.2]	174.8	209.6	289.1	[157.2]	171.4	209.6	282.7	[157.2]	171.4	209.6	317.5
200	8	[209.6]	222.2	257.3	358.9	[206.2]	215.9	257.3	352.6	[200.2]	215.9	257.3	387.4
250	10	[260.4]	276.4	311.2	435.1	[257.8]	266.7	311.2	435.1	[247.6]	270.0	311.2	476.2
300	12	[314.5]	323.8	368.3	498.6	[314.5]	323.8	368.3	520.7	292.1	317.5	368.3	549.4
350	14	[342.9]	355.6	400.0	520.7	[339.9]	362.0	400.0	577.8	—	—	—	—
400	16	[393.7]	412.8	457.2	574.8	[387.4]	406.4	457.2	641.4	—	—	—	—
450	18	[444.5]	463.6	520.7	638.3	[438.2]	463.6	520.7	704.8	—	—	—	—
500	20	[495.3]	520.7	571.5	698.5	[489.0]	514.4	571.5	755.6	—	—	—	—
600	24	[603.2]	628.6	679.4	838.2	577.8	616.0	679.4	901.7	—	—	—	—

* For bolts, we recommend high-strength alloy steel of SNB-7 or higher.
* The flange nominal diameter in ( ) should not be used as much as possible.
* Use the inside of the bold border ☐ for butt-welded flanges or socket-welded flanges. It cannot be used for slip-on welded flanges.
* The dimensions of [ ] are different from those of JPI-7S-41-2005 version.

JPI-7S-41 large diameter Series A

Applicable standard
JPI-7S-41-2018 "Spiral wound gaskets for petroleum industry"

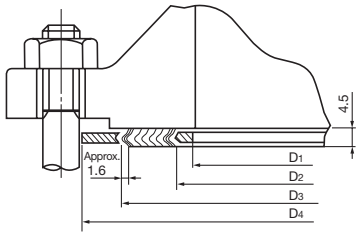
Applicable flange
JPI-7S-43 2008 "Large Diameter Carbon Steel Flanges for the Petroleum Industry"
ASME B16.47 2017 "Large-Diameter Steel Flanges, series A"
MSS-SP-44-2016 "Steel Pipeline Flanges"

Dimension Table 52

(Unit: mm)

Nominal flange diameter		Class 150				Class 300			
A	B	Inner ring I.D D_1	Body I.D D_2	Body O.D D_3	Outer ring O.D D_4	Inner ring I.D D_1	Body I.D D_2	Body O.D D_3	Outer ring O.D D_4
650	26	654.1	673.1	704.9	774.7	654.1	685.8	736.6	835.2
700	28	704.9	723.9	755.7	831.9	704.9	736.6	787.4	898.7
750	30	755.7	774.7	806.5	882.7	755.7	793.8	844.6	952.5
800	32	806.5	825.5	860.6	939.8	806.5	850.9	901.7	1006.6
850	34	857.3	876.3	911.4	990.6	857.3	901.7	952.5	1057.4
900	36	908.1	927.1	968.5	1047.8	908.1	955.8	1006.6	1117.6
950	38	958.9	977.9	1019.3	1111.2	952.5	977.9	1016.0	1054.1
1000	40	1009.7	1028.7	1070.1	1162.0	1003.3	1022.4	1070.1	1114.6
1050	42	1060.5	1079.5	1124.0	1219.2	1054.1	1073.2	1120.9	1165.4
1100	44	1111.3	1130.3	1178.1	1276.4	1104.9	1130.3	1181.1	1219.2
1150	46	1162.1	1181.1	1228.9	1327.2	1152.7	1178.1	1228.9	1273.3
1200	48	1212.9	1231.9	1279.7	1384.3	1209.8	1235.2	1286.0	1324.1
(1250)	(50)	1263.7	1282.7	1333.5	1435.1	1244.6	1295.4	1346.2	1378.0
(1300)	(52)	1314.5	1333.5	1384.3	1492.2	1320.8	1346.2	1397.0	1428.8
1350	54	1358.9	1384.3	1435.1	1549.4	1352.6	1403.4	1454.2	1492.3
(1400)	(56)	1409.7	1435.1	1485.9	1606.6	1403.4	1454.2	1505.0	1543.1
(1450)	(58)	1460.5	1485.9	1536.7	1663.7	1447.8	1511.3	1562.1	1593.9
1500	60	1511.3	1536.7	1587.5	1714.5	1524.0	1562.1	1612.9	1644.7

* Use a butt-welded flange.
* The flange nominal diameter in ( ) should not be used as much as possible.



With inner and outer rings

* The O.D. of the main body is the dimension of the convex part excluding spring layers.

(Unit: mm)

Nominal flange diameter		Class 400				Class 600				Class 900			
A	B	Inner ring I.D D_1	Body I.D D_2	Body O.D D_3	Outer ring O.D D_4	Inner ring I.D D_1	Body I.D D_2	Body O.D D_3	Outer ring O.D D_4	Inner ring I.D D_1	Body I.D D_2	Body O.D D_3	Outer ring O.D D_4
650	26	660.4	685.8	736.6	831.9	647.7	685.8	736.6	866.9	660.4	685.8	736.6	882.7
700	28	711.2	736.6	787.4	892.3	698.5	736.6	787.4	914.4	711.2	736.6	787.4	946.2
750	30	755.7	793.8	844.6	946.2	755.7	793.8	844.6	971.6	768.4	793.8	844.6	1009.7
800	32	812.8	850.9	901.7	1003.3	812.8	850.9	901.7	1022.4	812.8	850.9	901.7	1073.2
850	34	863.8	901.7	952.5	1054.1	863.6	901.7	952.5	1073.2	863.6	901.7	952.5	1136.7
900	36	917.7	955.8	1006.6	1117.6	917.7	955.8	1006.6	1130.3	920.8	958.9	1009.7	1200.2
950	38	952.5	971.6	1022.4	1073.2	952.5	990.6	1041.4	1104.9	1009.7	1035.1	1085.9	1200.2
1000	40	1000.3	1025.7	1076.5	1127.3	1009.7	1047.8	1098.6	1155.7	1060.5	1098.6	1149.4	1251.0
1050	42	1051.1	1076.5	1127.3	1178.1	1066.8	1104.9	1155.7	1219.2	1111.3	1149.4	1200.2	1301.8
1100	44	1104.9	1130.3	1181.1	1231.9	1111.3	1162.1	1212.9	1270.0	1155.7	1206.5	1257.3	1368.6
1150	46	1168.4	1193.8	1244.6	1289.1	1162.1	1212.9	1263.7	1327.2	1219.2	1270.0	1320.8	1435.1
1200	48	1206.5	1244.6	1295.4	1346.2	1219.2	1270.0	1320.8	1390.7	1270.0	1320.8	1371.6	1485.9
(1250)	(50)	1257.3	1295.4	1346.2	1403.4	1270.0	1320.8	1371.6	1447.8	—	—	—	—
(1300)	(52)	1308.1	1346.2	1397.0	1454.2	1320.8	1371.6	1422.4	1498.6	—	—	—	—
1350	54	1352.6	1403.4	1454.2	1517.7	1378.0	1428.8	1479.6	1555.8	—	—	—	—
(1400)	(56)	1403.4	1454.2	1505.0	1568.5	1428.8	1479.6	1530.4	1612.9	—	—	—	—
(1450)	(58)	1454.2	1505.0	1555.8	1619.3	1473.2	1536.7	1587.5	1663.7	—	—	—	—
1500	60	1517.7	1568.5	1619.3	1682.8	1530.4	1593.9	1644.7	1733.6	—	—	—	—

JPI-7S-41 large diameter Series B

Applicable standard

JPI-7S-41-2018 "Spiral wound gaskets for petroleum industry"
( ) is (old) JPI-7S-41-1990

Applicable flange

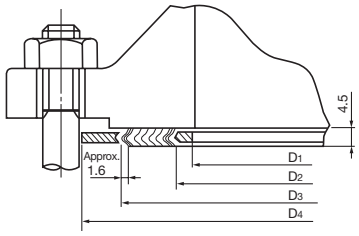
JPI-7S-43 2008 "Large Diameter Carbon Steel Flanges for the Petroleum Industry" Series B
ASME B16.47 2017 "Large-Diameter Steel Flanges, series B"
API 605

Dimension Table 53

(Unit: mm)

Nominal flange diameter		Class 150				Class 300			
A	B	Inner ring I.D D_1	Body I.D D_2	Body O.D D_3	Outer ring O.D D_4	Inner ring I.D D_1	Body I.D D_2	Body O.D D_3	Outer ring O.D D_4
650	26	654.1	673.1	698.5	725.4	654.1	673.1	711.2	771.7
700	28	704.9	723.9	749.3	776.2	704.9	723.9	762.0	825.5
750	30	755.7	774.7	800.1	827.0	755.7	774.7	812.8	886.0
800	32	806.5	825.5	850.9	881.1	806.5	825.5	863.6	939.8
850	34	857.3	876.3	908.1	935.0	857.3	876.3	914.4	993.9
900	36	908.1	927.1	958.9	987.6	908.1	927.1	965.2	1047.8
950	38	958.9	974.9	1009.7	1044.7	971.6	1009.7	1047.8	1098.6
1000	40	1009.7	1022.4	1063.8	1095.5	1022.4	1060.5	1098.6	1149.4
1050	42	1060.5	1079.5	1114.6	1146.3	1085.9	1111.3	1149.4	1200.2
1100	44	1111.3	1124.0	1165.4	1197.1	1124.0	1162.1	1200.2	1251.0
1150	46	1162.1	1181.1	1224.0	1255.8	1178.1	1216.2	1254.3	1317.8
1200	48	1212.9	1231.9	1270.0	1306.6	1231.9	1263.7	1311.4	1368.6
(1250)	(50)	1263.7	1282.7	1325.6	1357.4	1267.0	1317.8	1355.9	1419.4
(1300)	(52)	1314.5	1333.5	1376.4	1408.2	1317.8	1368.6	1406.7	1470.2
1350	54	1365.3	1384.3	1422.4	1463.8	1365.3	1403.4	1454.2	1530.4
(1400)	(56)	1422.4	1444.8	1478.0	1514.6	1428.8	1479.6	1524.0	1593.9
(1450)	(58)	1478.0	1500.1	1528.8	1579.6	1484.4	1535.2	1573.3	1655.8
1500	60	1535.2	1557.3	1586.0	1630.4	1557.3	1589.0	1630.4	1706.6

* When using for a slip-on welded flange, please note that the inner ring inner diameter may protrude from the flange inner diameter. We recommend using a butt weld flange.
* When using for a nominal pressure of class 900 or higher, use a butt welded flange. We also recommend using inner and outer rings.
* For large diameter flanges with a flange nominal diameter of 26B (650A) or more, we recommend gaskets with inner and outer rings.
* For bolts, we recommend high-strength alloy steel of SNB-7 or higher.
* The flange nominal diameter in ( ) should not be used as much as possible.



With inner and outer rings

* The O.D. of the main body is the dimension of the convex part excluding spring layers.

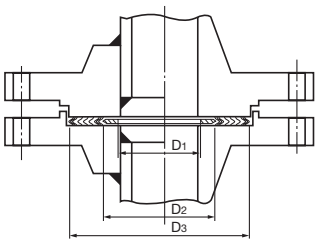
(Unit: mm)

Nominal flange diameter		Class 400				Class 600				Class 900			
A	B	Inner ring I.D D_1	Body I.D D_2	Body O.D D_3	Outer ring O.D D_4	Inner ring I.D D_1	Body I.D D_2	Body O.D D_3	Outer ring O.D D_4	Inner ring I.D D_1	Body I.D D_2	Body O.D D_3	Outer ring O.D D_4
650	26	654.1	666.8	698.5	746.3	644.7	663.7	714.5	765.3	666.8	692.2	749.3	838.2
700	28	701.8	714.5	749.3	800.1	685.8	704.9	755.7	819.2	717.6	743.0	800.1	901.7
750	30	752.6	765.3	806.5	857.3	752.6	778.0	828.8	879.6	781.1	806.5	857.3	958.9
800	32	800.1	812.8	860.6	911.4	793.8	831.9	882.7	933.5	838.2	863.6	914.4	1016.0
850	34	850.9	866.9	911.4	962.2	850.9	889.0	939.8	997.0	895.4	920.8	971.6	1073.2
900	36	898.7	917.7	965.2	1022.4	901.7	939.8	990.6	1047.8	920.8	946.2	997.0	1124.0
950	38	—	—	—	—	—	—	—	—	—	—	—	—
1000	40	—	—	—	—	—	—	—	—	—	—	—	—
1050	42	—	—	—	—	—	—	—	—	—	—	—	—
1100	44	—	—	—	—	—	—	—	—	—	—	—	—
1150	46	—	—	—	—	—	—	—	—	—	—	—	—
1200	48	—	—	—	—	—	—	—	—	—	—	—	—
(1250)	(50)	—	—	—	—	—	—	—	—	—	—	—	—
(1300)	(52)	—	—	—	—	—	—	—	—	—	—	—	—
1350	54	—	—	—	—	—	—	—	—	—	—	—	—
(1400)	(56)	—	—	—	—	—	—	—	—	—	—	—	—
(1450)	(58)	—	—	—	—	—	—	—	—	—	—	—	—
1500	60	—	—	—	—	—	—	—	—	—	—	—	—

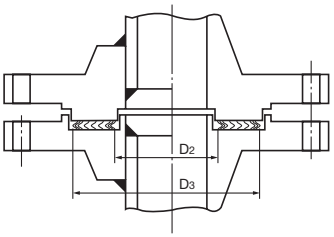
JPI-7S-41 for male & female flanges and tongue & groove flanges

Applicable standard
JPI-7S-41-2018 "Spiral wound gaskets for petroleum industry"

Applicable flange
JPI-7S-15-2011 "Pipe Flanges for the Petroleum Industry"
ASME B16.5 2017 "Pipe Flanges and Flanged Fittings"



male & female type



Tongue & groove type

Dimension Table 54

(Unit: mm)

Nominal flange diameter		Inner ring I.D. D_1					Gasket body	
A	B	Class 300	Class 400 Class 600	Class 900	Class 1500	Class 2500	I.D D_2	O.D D_3
15	1/2	14.2	14.2	14.2	14.2	14.2	25.1	35.4
20	3/4	20.6	20.6	20.6	20.6	20.6	33.0	43.2
25	1	26.9	26.9	26.9	26.9	26.9	37.8	51.1
(32)	(1 1/4)	38.1	38.1	33.3	33.3	33.3	47.2	63.8
40	1 1/2	44.5	44.5	41.4	41.4	41.4	53.5	73.5
50	2	55.6	55.6	52.3	52.3	52.3	72.6	92.5
65	2 1/2	66.5	66.5	63.5	63.5	63.5	85.3	105.2
80	3	81.0	81.0	78.7	78.7	78.7	107.6	127.3
(90)	(3 1/2)	93.7	93.7	—	—	—	120.3	140.0
100	4	106.4	102.6	102.6	97.8	97.8	131.2	157.6
(125)	(5)	131.8	128.3	128.3	124.5	124.5	160.0	186.3
150	6	157.2	154.9	154.9	147.3	147.3	190.2	216.3
200	8	215.9	205.7	196.8	196.8	196.8	237.7	270.0
250	10	268.2	255.3	246.1	246.1	246.1	285.7	323.9
300	12	317.5	307.3	292.1	292.1	291.1	342.9	381.0
350	14	349.2	342.9	320.8	320.8	—	374.6	412.8
400	16	400.0	389.9	374.6	368.3	—	425.4	469.9
450	18	449.3	438.1	425.4	425.4	—	488.9	533.4
500	20	500.1	488.9	482.6	476.2	—	533.4	584.2
600	24	603.2	590.5	590.5	577.8	—	641.8	691.7

* For bolts, we recommend high-strength alloy steel of SNB-7 or higher.
* It is recommended that the depth of groove in the seat should be at least 5.5 mm in consideration of the thickness and dimensional tolerance of the gasket.
* The flange nominal diameter in ( ) should not be used as much as possible.

JPI-7S-41 for metric screws

Applicable standard
JPI-7S-41-2018 "Spiral wound gaskets for petroleum industry"

Applicable flange
JPI-7S-15-2011 "Pipe Flanges for the Petroleum Industry"

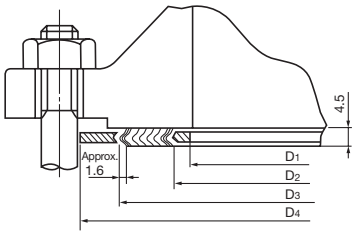
Dimension Table 55

(Unit: mm)

Nominal flange diameter		Class 150					Class 300					Class 400					Class 600				
A	B	Nominal bolt of metric screw	Inner ring I.D D_1	I.D D_2	O.D D_3	Outer ring O.D D_4	Nominal bolt of metric screw	Inner ring I.D D_1	I.D D_2	O.D D_3	Outer ring O.D D_4	Nominal bolt of metric screw	Inner ring I.D D_1	I.D D_2	O.D D_3	Outer ring O.D D_4	Nominal bolt of metric screw	Inner ring I.D D_1	I.D D_2	O.D D_3	Outer ring O.D D_4
15	1/2	M14	14.2	19.1	31.8	45.5	M14	14.2	19.1	31.8	51.5	M14	14.2	19.1	31.8	51.5	M14	14.2	19.1	31.8	51.5
20	3/4	M14	20.6	25.4	39.6	54.8	M16	20.6	25.4	39.6	65.6	M16	20.6	25.4	39.6	65.6	M16	20.6	25.4	39.6	65.6
25	1	M14	26.9	31.8	47.8	64.2	M16	26.9	31.8	47.8	71.9	M16	26.9	31.8	47.8	71.9	M16	26.9	31.8	47.8	71.9
(32)	(1 1/4)	M14	38.1	47.8	60.5	73.9	M16	38.1	47.8	60.5	81.6	M16	38.1	47.8	60.5	81.6	M16	38.1	47.8	60.5	81.6
40	1 1/2	M14	44.5	54.1	69.9	83.6	M20	44.5	54.1	69.9	93.3	M20	44.5	54.1	69.9	93.3	M20	44.5	54.1	69.9	93.3
50	2	M16	55.6	69.9	85.9	103.6	M16	55.6	69.9	85.9	110.0	M16	55.6	69.9	85.9	110.0	M16	55.6	69.9	85.9	110.0
65	2 1/2	M16	66.5	82.6	98.6	122.7	M20	66.5	82.6	98.6	128.4	M20	66.5	82.6	98.6	128.4	M20	66.5	82.6	98.6	128.4
80	3	M16	81.0	101.6	120.7	135.4	M20	81.0	101.6	120.7	147.1	M20	81.0	101.6	120.7	147.1	M20	81.0	101.6	120.7	147.1
(90)	(3 1/2)	M16	93.7	114.3	133.3	160.8	M20	93.7	114.3	133.3	163.2	M24	93.7	114.3	133.3	159.2	M24	93.7	114.3	133.3	159.2
100	4	M16	106.4	127.0	149.4	173.5	M20	106.4	127.0	149.4	179.2	M24	102.6	120.7	149.4	175.2	M24	102.6	120.7	149.4	190.9
(125)	(5)	M20	131.8	155.7	177.8	194.9	M20	131.8	155.7	177.8	214.0	M24	128.3	147.6	177.8	210.0	M27	128.3	147.6	177.8	238.7
150	6	M20	157.2	182.6	209.6	220.3	M20	157.2	182.6	209.6	248.7	M24	154.9	174.8	209.6	244.7	M27	154.9	174.8	209.6	264.1
200	8	M20	215.9	233.4	263.7	277.4	M24	215.9	233.4	263.7	305.2	M27	205.7	225.6	263.7	302.2	M30×3	205.7	225.6	263.7	318.2
250	10	M24	268.2	287.3	317.5	337.0	M27	268.2	287.3	317.5	359.4	M30×3	255.3	274.6	317.5	356.4	M33×3	255.3	274.6	317.5	397.8
300	12	M24	317.5	339.9	374.7	406.8	M30×3	317.5	339.9	374.7	419.8	M33×3	307.3	327.2	374.7	416.8	M33×3	307.3	327.2	374.7	455.0
350	14	M27	349.3	371.6	406.4	448.2	M30×3	349.3	371.6	406.4	483.4	M33×3	342.9	362.0	406.4	480.4	M36×3	342.9	362.0	406.4	490.0
400	16	M27	400.1	422.4	463.6	511.8	M33×3	400.1	422.4	463.6	537.5	M36×3	389.9	412.8	463.6	534.5	M39×3	389.9	412.8	463.6	563.2
450	18	M30×3	449.3	474.7	527.1	546.8	M33×3	449.3	474.7	527.1	594.6	M36×3	438.2	469.9	527.1	591.6	M42×3	438.2	469.9	527.1	611.0
500	20	M30×3	500.1	525.5	577.9	604.0	M33×3	500.1	525.5	577.9	651.8	M39×3	489.0	520.7	577.9	645.8	M42×3	489.0	520.7	577.9	680.9
550	22	M30×3	552.4	577.8	635.0	659.2	M39×3	552.4	577.8	635.0	704.0	M42×3	552.4	577.8	635.0	701.0	M45×3	552.4	577.8	653.0	732.7
600	24	M30×3	603.3	628.7	685.8	715.3	M39×3	603.3	628.7	685.8	772.8	M45×3	590.6	628.7	685.8	766.8	M48×3	590.6	628.7	685.8	789.2

* The inside of the bolt border □ cannot be used for slip-on welding type flanges.
* Please note that the inner ring inner diameter of the gasket may protrude from the flange inner diameter.
* For bolts, we recommend high-strength alloy steel of SNB-7 or higher.
* The flange nominal diameter in ( ) should not be used as much as possible.

When using a gasket with a pressure class and flange nominal diameter in a bold border for a slip-on welding type (insertion welding type) flange, please use the dimensions on page 68.



With inner and outer rings

* The O.D. of the main body is the dimension of the convex part excluding spring layers.

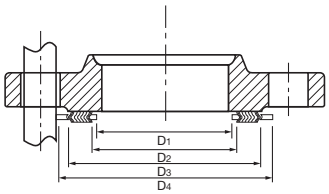
(Unit: mm)

Nominal flange diameter		Class 900					Class 1500					Class 2500				
A	B	Nominal bolt of metric screw	Inner ring I.D D_1	I.D D_2	O.D D_3	Outer ring O.D D_4	Nominal bolt of metric screw	Inner ring I.D D_1	I.D D_2	O.D D_3	Outer ring O.D D_4	Nominal bolt of metric screw	Inner ring I.D D_1	I.D D_2	O.D D_3	Outer ring O.D D_4
15	1/2	M20	14.2	19.1	31.8	61.6	M20	14.2	19.1	31.8	61.6	M20	14.2	19.1	31.8	67.9
20	3/4	M20	20.6	25.4	39.6	67.9	M20	20.6	25.4	39.6	67.9	M20	20.6	25.4	39.6	74.2
25	1	M24	26.9	31.8	47.8	76.6	M24	26.9	31.8	47.8	76.6	M24	26.9	31.8	47.8	83.0
(32)	(1 1/4)	M24	33.3	39.6	60.5	86.3	M24	33.3	39.6	60.5	86.3	M27	33.3	39.6	60.5	102.0
40	1 1/2	M27	41.4	47.8	69.9	96.0	M27	41.4	47.8	69.9	96.0	M30×3	41.4	47.8	69.9	115.0
50	2	M24	52.3	58.7	85.9	140.1	M24	52.3	58.7	85.9	140.1	M27	52.3	58.7	85.9	143.4
65	2 1/2	M27	63.5	69.9	98.6	162.5	M27	63.5	69.9	98.6	162.5	M30×3	63.5	69.9	98.6	165.8
80	3	M24	78.7	95.3	120.7	165.5	M30×3	78.7	92.2	120.7	172.2	M33×3	78.7	92.2	120.7	194.5
(90)	(3 1/2)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
100	4	M30×3	102.6	120.7	149.4	204.0	M33×3	97.8	117.6	149.4	207.3	M39×3	97.8	117.6	149.4	233.0
(125)	(5)	M33×3	128.3	147.6	177.8	245.4	M39×3	124.5	143.0	177.8	252.1	M45×3	124.5	143.0	177.8	277.8
150	6	M30×3	154.9	174.8	209.6	286.5	M36×3	147.3	171.5	209.6	280.5	M52×3	147.3	171.5	209.6	315.3
200	8	M36×3	196.9	222.3	257.3	356.7	M42×3	196.9	215.9	257.3	350.7	M52×3	196.9	215.9	257.3	385.2
250	10	M36×3	246.1	276.4	311.2	432.9	M48×3	246.1	266.7	311.2	433.6	M64×3	246.1	270.0	311.2	474.8
300	12	M36×3	292.1	323.9	368.3	496.4	M52×3	292.1	323.9	368.3	518.5	M70×3	292.1	317.5	368.3	548.3
350	14	M39×3	320.8	355.6	400.1	518.8	M56×3	320.8	362.0	400.1	578.0	—	—	—	—	—
400	16	M42×3	374.7	412.8	457.2	573.0	M64×3	368.3	406.4	457.2	639.8	—	—	—	—	—
450	18	M48×3	425.5	463.6	520.7	636.8	M70×3	425.5	463.6	520.7	703.7	—	—	—	—	—
500	20	M52×3	482.6	520.7	571.5	696.3	M76×3	476.3	514.4	571.5	754.8	—	—	—	—	—
600	24	M64×3	590.6	628.7	679.5	836.7	M90×3	577.9	616.0	679.5	899.6	—	—	—	—	—

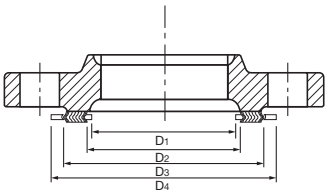
JPI slip-on welded flanges (plug-in welded flanges) for metric screws

Applicable standard
This dimension table is set by NICHIAS based on JPI-7S-15-2011.

Applicable flange
JPI-7S-15-2011 "Pipe Flanges for the Petroleum Industry"



Slip-on welded flange A type



Slip-on welded flange B type

Dimension Table 56

(Unit: mm)

Nominal flange diameter		Class 150				Class 300, 400, 600				Class 900				Class 1500			
A	B	Inner ring I.D D_1	Body I.D D_2	Body O.D D_3	Outer ring O.D D_4	Inner ring I.D D_1	Body I.D D_2	Body O.D D_3	Outer ring O.D D_4	Inner ring I.D D_1	Body I.D D_2	Body O.D D_3	Outer ring O.D D_4	Inner ring I.D D_1	Body I.D D_2	Body O.D D_3	Outer ring O.D D_4
15	1/2	18.2	24.2	34.9	47.0	18.2	24.2	34.9	53.0	18.2	24.2	34.9	63.1	18.2	24.2	34.9	63.1
20	3/4	23.0	29.7	42.9	56.3	23.0	29.7	42.9	68.1	23.0	29.7	42.9	69.4	23.0	29.7	42.9	69.4
25	1	30.0	36.5	50.8	65.7	30.0	36.5	50.8	74.4	30.0	36.5	50.8	78.1	30.0	36.5	50.8	78.1
(32)	(1 1/4)	—	—	—	—	—	—	—	—	33.3	46.0	63.5	87.8	33.3	46.0	63.5	87.8
40	1 1/2	—	—	—	—	—	—	—	—	41.4	50.8	73.2	97.5	41.4	50.8	73.2	97.5
50	2	—	—	—	—	—	—	—	—	52.3	63.5	91.9	141.6	52.3	63.5	91.9	141.6
65	2 1/2	—	—	—	—	—	—	—	—	63.5	79.5	104.6	164.0	63.5	79.5	104.6	164.0
350	14	—	—	—	—	—	—	—	—	342.9	363.0	400.0	519.8	—	—	—	—

* For bolts, we recommend high-strength alloy steel of SNB-7 or higher.
* The outer diameter of the gasket body is the dimension of the mountain (convex part) that does not include the spring layers.
* The flange nominal diameter in ( ) should not be used as much as possible.

JPI-7S-41 large diameter series A for metric screws

Applicable standard
JPI-7S-41-2018 "Spiral wound gaskets for petroleum industry"

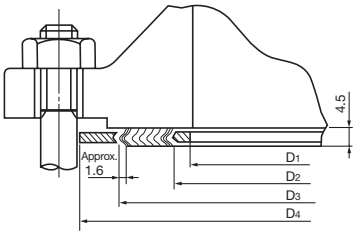
Applicable flange
JPI-7S-15-2011 "Pipe Flanges for the Petroleum Industry"

Dimension Table 57

(Unit: mm)

Nominal flange diameter		Class 150					Class 300				
A	B	Nominal bolt of metric screw	Inner ring I.D D_1	Body		Outer ring O.D D_4	Nominal bolt of metric screw	Inner ring I.D D_1	Body		Outer ring O.D D_4
				I.D D_2	O.D D_3				I.D D_2	O.D D_3	
650	26	M33×3	654.1	673.1	704.9	772.4	M42×3	654.1	685.8	736.6	833.3
700	28	M33×3	704.9	723.9	755.7	829.6	M42×3	704.9	736.6	787.4	896.8
750	30	M33×3	755.7	774.7	806.5	880.4	M45×3	755.7	793.8	844.6	951.0
800	32	M39×3	806.5	825.5	860.6	937.9	M48×3	806.5	850.9	901.7	1005.1
850	34	M39×3	857.3	876.3	911.4	988.7	M48×3	857.3	901.7	952.5	1055.9
900	36	M39×3	908.1	927.1	968.5	1045.8	M52×3	908.1	955.8	1006.6	1115.4
950	38	M39×3	958.9	977.9	1019.3	1109.4	M39×3	952.5	977.9	1016.0	1052.2
1000	40	M39×3	1009.7	1028.7	1070.1	1160.2	M42×3	1003.3	1022.4	1070.1	1112.7
1050	42	M39×3	1060.5	1079.5	1124.0	1217.2	M42×3	1054.1	1073.2	1120.9	1163.5
1100	44	M39×3	1111.3	1130.3	1178.1	1274.4	M45×3	1104.9	1130.3	1181.1	1217.6
1150	46	M39×3	1162.1	1181.1	1228.9	1325.2	M48×3	1152.7	1178.1	1228.9	1271.8
1200	48	M39×3	1212.9	1231.9	1279.7	1382.4	M48×3	1209.8	1235.2	1286.0	1322.6
(1250)	(50)	M45×3	1263.7	1282.7	1333.5	1433.6	M52×3	1244.6	1295.4	1346.2	1375.8
(1300)	(52)	M45×3	1314.5	1333.5	1384.3	1490.7	M52×3	1320.8	1346.2	1397.0	1426.6
1350	54	M45×3	1358.9	1384.3	1435.1	1547.8	M56×3	1352.6	1403.4	1454.2	1492.4
(1400)	(56)	M45×3	1409.7	1435.1	1485.9	1605.0	M56×3	1403.4	1454.2	1505.0	1543.2
(1450)	(58)	M45×3	1460.5	1485.9	1536.7	1662.2	M56×3	1447.8	1511.3	1562.1	1594.0
1500	60	M45×3	1511.3	1536.7	1587.5	1713.0	M56×3	1524.0	1562.1	1612.9	1644.8

* Use a butt-welded flange.
* For bolts, we recommend high-strength alloy steel of SNB-7 or higher.
* The flange nominal diameter in ( ) should not be used as much as possible.



With inner and outer rings

* The outer diameter of the gasket body is the dimension of the mountain (convex part) that does not include the spring layers.

(Unit: mm)

Nominal flange diameter		Class 400					Class 600					Class 900				
A	B	Nominal bolt of metric screw	Inner ring I.D D_1	Body I.D D_2	Body O.D D_3	Outer ring O.D D_4	Nominal bolt of metric screw	Inner ring I.D D_1	Body I.D D_2	Body O.D D_3	Outer ring O.D D_4	Nominal bolt of metric screw	Inner ring I.D D_1	Body I.D D_2	Body O.D D_3	Outer ring O.D D_4
650	26	M45×3	660.4	685.8	736.6	830.3	M48×3	647.7	685.8	736.6	865.4	M70×3	668.8	685.8	736.6	881.5
700	28	M48×3	711.2	736.6	787.4	890.8	M52×3	698.5	736.6	787.4	912.2	M76×3	711.2	736.6	787.4	945.4
750	30	M52×3	755.7	793.8	844.6	944.0	M52×3	755.7	793.8	844.6	969.4	M76×3	774.7	793.8	844.6	1008.8
800	32	M52×3	812.8	850.9	901.7	1001.1	M56×3	812.8	850.9	901.7	1022.5	M82×3	812.8	850.9	901.7	1072.7
850	34	M52×3	863.6	901.7	952.5	1051.9	M56×3	863.6	901.7	952.5	1073.3	M90×3	863.6	901.7	952.5	1134.6
900	36	M52×3	917.7	955.8	1006.6	1115.4	M64×3	917.7	955.8	1006.6	1128.8	M90×3	920.8	958.8	1009.7	1198.0
950	38	M45×3	952.5	971.6	1022.4	1071.6	M56×3	952.5	990.6	1041.4	1105.0	M90×3	1009.7	1035.1	1085.9	1198.0
1000	40	M48×3	1000.3	1025.7	1076.5	1125.8	M56×3	1009.7	1047.8	1098.6	1155.8	M90×3	1060.5	1098.6	1149.4	1248.8
1050	42	M48×3	1051.1	1076.5	1127.3	1176.6	M64×3	1066.8	1104.9	1155.7	1217.7	M90×3	1111.3	1149.4	1200.2	1299.6
1100	44	M52×3	1104.9	1130.3	1181.1	1229.7	M64×3	1111.3	1162.1	1212.9	1268.5	M95×3	1155.7	1206.5	1257.3	1367.5
1150	46	M52×3	1168.4	1193.8	1244.6	1286.8	M64×3	1162.1	1212.9	1263.7	1325.6	M100×3	1219.2	1270.0	1320.8	1435.7
1200	48	M56×3	1206.5	1244.6	1295.4	1346.4	M70×3	1219.2	1270.0	1320.8	1389.5	M100×3	1270.0	1320.8	1371.6	1486.5
(1250)	(50)	M56×3	1257.3	1295.4	1346.2	1403.5	M76×3	1270.0	1320.8	1371.6	1447.0	—	—	—	—	—
(1300)	(52)	M56×3	1308.1	1346.2	1397.0	1454.3	M76×3	1320.8	1371.6	1422.4	1497.8	—	—	—	—	—
1350	54	M64×3	1352.6	1403.4	1454.2	1516.2	M76×3	1378.0	1428.8	1479.6	1555.0	—	—	—	—	—
(1400)	(56)	M64×3	1403.4	1454.2	1505.0	1567.0	M82×3	1428.8	1479.6	1530.4	1612.4	—	—	—	—	—
(1450)	(58)	M64×3	1454.2	1505.0	1555.8	1617.8	M82×3	1473.2	1536.7	1587.5	1663.2	—	—	—	—	—
1500	60	M70×3	1517.7	1568.5	1619.3	1681.6	M90×3	1530.4	1593.9	1644.7	1731.4	—	—	—	—	—

JPI-7S-41 large diameter series B for metric screws

Applicable standard
JPI-7S-41-2018 "Spiral wound gaskets for petroleum industry"

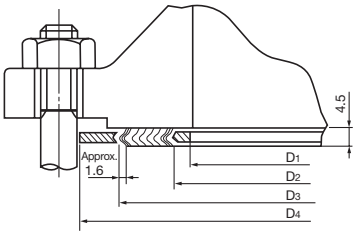
Applicable flange
JPI-7S-15-2011 "Pipe Flanges for the Petroleum Industry"

Dimension Table 58

(Unit: mm)

Nominal flange diameter		Class 150					Class 300				
A	B	Nominal bolt of metric screw	Inner ring I.D D_1	Body		Outer ring O.D D_4	Nominal bolt of metric screw	Inner ring I.D D_1	Body		Outer ring O.D D_4
				I.D D_2	O.D D_3				I.D D_2	O.D D_3	
650	26	M20	654.1	673.1	698.5	723.5	M33×3	654.1	673.1	711.2	769.1
700	28	M20	704.9	723.9	749.3	774.3	M33×3	704.9	723.9	762.0	823.2
750	30	M20	755.7	774.7	800.1	825.1	M36×3	755.7	774.7	812.8	883.8
800	32	M20	806.5	825.5	850.9	879.2	M39×3	806.5	825.5	863.6	937.9
850	34	M24	857.3	876.3	908.1	932.3	M39×3	857.3	876.3	914.4	991.7
900	36	M24	908.1	927.1	958.9	984.6	M42×3	908.1	927.1	965.2	1046.2
950	38	M27×3	958.9	974.6	1009.7	1041.8	M42×3	971.6	1009.7	1047.8	1097.0
1000	40	M27×3	1009.7	1022.4	1063.8	1092.6	M42×3	1022.4	1060.5	1098.6	1147.8
1050	42	M27×3	1060.5	1079.5	1114.6	1143.4	M45×3	1085.9	1111.3	1149.4	1198.6
1100	44	M27×3	1111.3	1124.0	1165.4	1194.2	M45×3	1124.0	1162.1	1200.2	1249.4
1150	46	M30×3	1162.1	1181.1	1224.0	1253.2	M48×3	1178.1	1216.2	1254.3	1316.2
1200	48	M30×3	1212.9	1231.9	1270.0	1304.0	M48×3	1231.9	1263.7	1311.4	1367.0
(1250)	(50)	M30×3	1263.7	1282.7	1325.6	1354.8	M48×3	1267.0	1317.8	1355.9	1417.8
(1300)	(52)	M30×3	1314.5	1333.5	1376.4	1405.6	M48×3	1317.8	1368.6	1406.7	1468.6
1350	54	M30×3	1365.3	1384.3	1422.4	1461.2	M48×3	1365.3	1403.4	1454.2	1528.8
(1400)	(56)	M30×3	1422.4	1444.8	1478.0	1512.0	M56×3	1428.8	1479.6	1524.0	1594.0
(1450)	(58)	M33×3	1478.0	1500.1	1528.8	1577.4	M56×3	1484.4	1535.2	1573.3	1656.0
1500	60	M33×3	1535.2	1557.3	1586.0	1628.2	M56×3	1557.3	1589.0	1630.4	1706.8

* Use a butt-welded flange.
* For bolts, we recommend high-strength alloy steel of SNB-7 or higher.
* The flange nominal diameter in ( ) should not be used as much as possible.



With inner and outer rings

* The outer diameter of the gasket body is the dimension of the mountain (convex part) that does not include the spring layers.

(Unit: mm)

Nominal flange diameter		Class 400					Class 600					Class 900				
A	B	Nominal bolt of metric screw	Inner ring I.D D_1	Body I.D D_2	Body O.D D_3	Outer ring O.D D_4	Nominal bolt of metric screw	Inner ring I.D D_1	Body I.D D_2	Body O.D D_3	Outer ring O.D D_4	Nominal bolt of metric screw	Inner ring I.D D_1	Body I.D D_2	Body O.D D_3	Outer ring O.D D_4
650	26	M36×3	654.1	666.8	698.5	744.0	M42×3	644.7	663.7	714.5	763.4	M64×3	666.8	692.2	749.3	836.7
700	28	M39×3	701.8	714.5	749.3	798.2	M45×3	692.2	704.9	755.7	817.6	M70×3	717.6	743.0	800.1	900.6
750	30	M39×3	752.6	765.3	806.5	855.4	M48×3	752.6	778.0	828.8	878.1	M76×3	781.1	806.5	857.3	958.0
800	32	M42×3	800.1	812.8	860.6	909.5	M52×3	793.8	831.9	882.7	931.2	M76×3	838.2	863.6	914.4	1015.2
850	34	M42×3	850.9	866.9	911.4	960.3	M56×3	850.9	889.0	939.8	997.1	M82×3	895.4	920.8	971.6	1072.7
900	36	M45×3	898.7	917.7	965.2	1020.8	M56×3	901.7	939.8	990.6	1047.9	M76×3	920.8	946.2	997.0	1123.2
950	38	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1000	40	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1050	42	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1100	44	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1150	46	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1200	48	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
(1250)	(50)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
(1300)	(52)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1350	54	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
(1400)	(56)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
(1450)	(58)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1500	60	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

ASME B16.20

Applicable standard
ASME B16.20-2017 "Metallic Gaskets for Pipe Flanges"

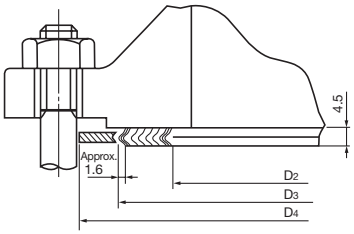
Applicable flange
ASME B16.5 2017 "Pipe Flanges and Flanged Fittings"

Dimension Table 59

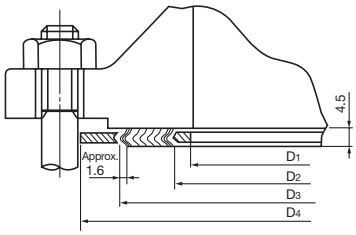
(Unit: mm)

Nominal flange diameter		Class 150				Class 300				Class 400			
		Inner ring I.D D_1	Body		Outer ring O.D D_4	Inner ring I.D D_1	Body		Outer ring O.D D_4	Inner ring I.D D_1	Body		Outer ring O.D D_4
A	B		I.D D_2	O.D D_3			I.D D_2	O.D D_3			I.D D_2	O.D D_3	
15	1/2	14.2	19.1	31.8	47.8	14.2	19.1	31.8	54.1	—	—	—	—
20	3/4	20.6	25.4	39.6	57.2	20.6	25.4	39.6	66.8	—	—	—	—
25	1	26.9	31.8	47.8	66.8	26.9	31.8	47.8	73.2	—	—	—	—
32	1 1/4	38.1	47.8	60.5	76.2	38.1	47.8	60.5	82.6	—	—	—	—
40	1 1/2	44.5	54.1	69.9	85.9	44.5	54.1	69.9	95.3	—	—	—	—
50	2	55.6	69.9	85.9	104.9	55.6	69.9	85.9	111.3	—	—	—	—
65	2 1/2	66.5	82.6	98.6	124.0	66.5	82.6	98.6	130.3	—	—	—	—
80	3	81.0	101.6	120.7	136.7	81.0	101.6	120.7	149.4	—	—	—	—
100	4	106.4	127.0	149.4	174.8	106.4	127.0	149.4	181.1	102.6	120.7	149.4	177.8
125	5	131.8	155.7	177.8	196.9	131.8	155.7	177.8	215.9	128.3	147.6	177.8	212.9
150	6	157.2	182.6	209.6	222.3	157.2	182.6	209.6	251.0	154.9	174.8	209.6	247.7
200	8	215.9	233.4	263.7	279.4	215.9	233.4	263.7	308.1	205.7	225.6	263.7	304.8
250	10	268.2	287.3	317.5	339.9	268.2	287.3	317.5	362.0	255.3	274.6	317.5	358.9
300	12	317.5	339.9	374.7	409.7	317.5	339.9	374.7	422.4	307.3	327.2	374.7	419.1
350	14	349.3	371.6	406.4	450.9	349.3	371.6	406.4	485.9	342.9	362.0	406.4	482.6
400	16	400.1	422.4	463.6	514.4	400.1	422.4	463.6	539.8	389.9	412.8	463.6	536.7
450	18	449.3	474.7	527.1	549.4	449.3	474.7	527.1	596.9	438.2	469.9	527.1	593.9
500	20	500.1	525.5	577.9	606.6	500.1	525.5	577.9	654.1	489.0	520.7	577.9	647.7
600	24	603.3	628.7	685.8	717.6	603.3	628.7	685.8	774.7	590.6	628.7	685.8	768.4

* For bolts, we recommend high-strength alloy steel of SNB-7 or higher.



With outer ring



With inner and outer ring

* The outer diameter of the gasket body is the dimension of the mountain (convex part) that does not include the spring layers.

(Unit: mm)

Nominal flange diameter		Class 600				Class 900				Class 1500				Class 2500			
		Inner ring I.D D_1	Body		Outer ring O.D D_4	Inner ring I.D D_1	Body		Outer ring O.D D_4	Inner ring I.D D_1	Body		Outer ring O.D D_4	Inner ring I.D D_1	Body		Outer ring O.D D_4
A	B		I.D D_2	O.D D_3			I.D D_2	O.D D_3			I.D D_2	O.D D_3			I.D D_2	O.D D_3	
15	1/2	14.2	19.1	31.8	54.1	—	—	—	—	14.2	19.1	31.8	63.5	14.2	19.1	31.8	69.9
20	3/4	20.6	25.4	39.6	66.8	—	—	—	—	20.6	25.4	39.6	69.9	20.6	25.4	39.6	76.2
25	1	26.9	31.8	47.8	73.2	—	—	—	—	26.9	31.8	47.8	79.5	26.9	31.8	47.8	85.9
32	1 1/4	38.1	47.8	60.5	82.6	—	—	—	—	33.3	39.6	60.5	88.9	33.3	39.6	60.5	104.9
40	1 1/2	44.5	54.1	69.9	95.3	—	—	—	—	41.4	47.8	69.9	98.6	41.4	47.8	69.9	117.6
50	2	55.6	69.9	85.9	111.3	—	—	—	—	52.3	58.7	85.9	143.0	52.3	58.7	85.9	146.1
65	2 1/2	66.5	82.6	98.6	130.3	—	—	—	—	63.5	69.9	98.6	165.1	63.5	69.9	98.6	168.4
80	3	81.0	101.6	120.7	149.4	78.7	95.3	120.7	168.4	78.7	92.2	120.7	174.8	78.7	92.2	120.7	196.9
100	4	102.6	120.7	149.4	193.8	102.6	120.7	149.4	206.5	97.8	117.6	149.4	209.6	97.8	117.6	149.4	235.0
125	5	128.3	147.6	177.8	241.3	128.3	147.6	177.8	247.7	124.5	143.0	177.8	254.0	124.5	143.0	177.8	279.4
150	6	154.9	174.8	209.6	266.7	154.9	174.8	209.6	289.1	147.3	171.5	209.6	282.7	147.3	171.5	209.6	317.5
200	8	205.7	225.6	263.7	320.8	196.9	222.3	257.3	358.9	196.9	215.9	257.3	352.6	196.9	215.9	257.3	387.4
250	10	255.3	274.6	317.5	400.1	246.1	276.4	311.2	435.1	246.1	266.7	311.2	435.1	246.1	270.0	311.2	476.3
300	12	307.3	327.2	374.7	457.2	292.1	323.9	368.3	498.6	292.1	323.9	368.3	520.7	292.1	317.5	368.3	549.4
350	14	342.9	362.0	406.4	492.3	320.8	355.6	400.1	520.7	320.8	362.0	400.1	577.9	—	—	—	—
400	16	389.9	412.8	463.6	565.2	374.7	412.8	457.2	574.8	368.3	406.4	457.2	641.4	—	—	—	—
450	18	438.2	469.9	527.1	612.9	425.5	463.6	520.7	638.3	425.5	463.6	520.7	704.9	—	—	—	—
500	20	489.0	520.7	577.9	682.8	482.6	520.7	571.5	698.5	476.3	514.4	571.5	755.7	—	—	—	—
600	24	590.6	628.7	685.8	790.7	590.6	628.7	679.5	838.2	577.9	616.0	679.5	901.7	—	—	—	—

ASME B16.20 large diameter series A

Applicable standard
ASME B16.20-2017 "Metallic Gaskets for Pipe Flanges"

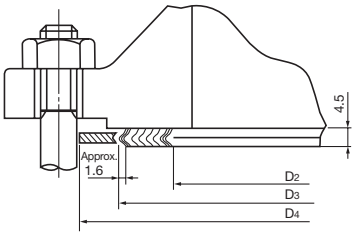
Applicable flange
ASME B16.47 2017"Large-Diameter Steel Flanges, series A"
MSS-SP-44-2016 "Steel Pipeline Flanges"

Dimension Table 60

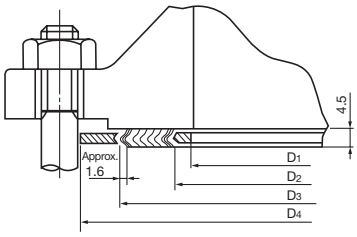
(Unit: mm)

Nominal flange diameter		Class 150				Class 300			
		Inner ring	Body		Outer ring	Inner ring	Body		Outer ring
A	B	I.D D_1	I.D D_2	O.D D_3	O.D D_4	I.D D_1	I.D D_2	O.D D_3	O.D D_4
650	26	654.1	673.1	704.9	774.7	654.1	685.8	736.6	835.2
700	28	704.9	723.9	755.7	831.9	704.9	736.6	787.4	898.7
750	30	755.7	774.7	806.5	882.7	755.7	793.8	844.6	952.5
800	32	806.5	825.5	860.6	939.8	806.5	850.9	901.7	1006.6
850	34	857.3	876.3	911.4	990.6	857.3	901.7	952.5	1057.4
900	36	908.1	927.1	968.5	1047.8	908.1	955.8	1006.6	1117.6
950	38	958.9	977.9	1019.3	1111.3	952.5	977.9	1016.0	1054.1
1000	40	1009.7	1028.7	1070.1	1162.1	1003.3	1022.4	1070.1	1114.6
1050	42	1060.5	1079.5	1124.0	1219.2	1054.1	1073.2	1120.9	1165.4
1100	44	1111.3	1130.3	1178.1	1276.4	1104.9	1130.3	1181.1	1219.2
1150	46	1162.1	1181.1	1228.9	1327.2	1152.7	1178.1	1228.9	1273.3
1200	48	1212.9	1231.9	1279.7	1384.3	1209.8	1235.2	1286.0	1324.1
1250	50	1263.7	1282.7	1333.5	1435.1	1244.6	1295.4	1346.2	1378.0
1300	52	1314.5	1333.5	1384.3	1492.3	1320.8	1346.2	1397.0	1428.8
1350	54	1358.9	1384.3	1435.1	1549.4	1352.6	1403.4	1454.2	1492.3
1400	56	1409.7	1435.1	1485.9	1606.6	1403.4	1454.2	1505.0	1543.1
1450	58	1460.5	1485.9	1536.7	1663.7	1447.8	1511.3	1562.1	1593.9
1500	60	1511.3	1536.7	1587.5	1714.5	1524.0	1562.1	1612.9	1644.7

* Please note that the inner ring inner diameter has been changed to a smaller size in ASME B16.20-1998.
* For bolts, we recommend high-strength alloy steel of SNB-7 or higher.



With outer ring



With inner and outer ring

* The outer diameter of the gasket body is the dimension of the mountain (convex part) that does not include the spring layers.

(Unit: mm)

Nominal flange diameter		Class 400				Class 600				Class 900			
		Inner ring	Body		Outer ring	Inner ring	Body		Outer ring	Inner ring	Body		Outer ring
A	B	I.D D_1	I.D D_2	O.D D_3	O.D D_4	I.D D_1	I.D D_2	O.D D_3	O.D D_4	I.D D_1	I.D D_2	O.D D_3	O.D D_4
650	26	660.4	685.8	736.6	831.9	647.7	685.8	736.6	866.9	660.4	685.8	736.6	882.7
700	28	711.2	736.6	787.4	892.3	698.5	736.6	787.4	914.4	711.2	736.6	787.4	946.2
750	30	755.7	793.8	844.6	946.2	755.7	793.8	844.6	971.6	768.4	793.8	844.6	1009.7
800	32	812.8	850.9	901.7	1003.3	812.8	850.9	901.7	1022.4	812.8	850.9	901.7	1073.2
850	34	863.6	901.7	952.5	1054.1	863.6	901.7	952.5	1073.2	863.6	901.7	952.5	1136.7
900	36	917.7	955.8	1006.6	1117.6	917.7	955.8	1006.6	1130.3	920.8	958.9	1009.7	1200.2
950	38	952.5	971.6	1022.4	1073.2	952.5	990.6	1041.4	1104.9	1009.7	1035.1	1085.9	1200.2
1000	40	1000.3	1025.7	1076.5	1127.3	1009.7	1047.8	1098.6	1155.7	1060.5	1098.6	1149.4	1251.0
1050	42	1051.1	1076.5	1127.3	1178.1	1066.8	1104.9	1155.7	1219.2	1111.3	1149.4	1200.2	1301.8
1100	44	1104.9	1130.3	1181.1	1231.9	1111.3	1162.1	1212.9	1270.0	1155.7	1206.5	1257.3	1368.6
1150	46	1168.4	1193.8	1244.6	1289.1	1162.1	1212.9	1263.7	1327.2	1219.2	1270.0	1320.8	1435.1
1200	48	1206.5	1244.6	1295.4	1346.2	1219.2	1270.0	1320.8	1390.7	1270.0	1320.8	1371.6	1485.9
1250	50	1257.3	1295.4	1346.2	1403.4	1270.0	1320.8	1371.6	1447.8	—	—	—	—
1300	52	1308.1	1346.2	1397.0	1454.2	1320.8	1371.6	1422.4	1498.6	—	—	—	—
1350	54	1352.6	1403.4	1454.2	1517.7	1378.0	1428.8	1479.6	1555.8	—	—	—	—
1400	56	1403.4	1454.2	1505.0	1568.5	1428.8	1479.6	1530.4	1612.9	—	—	—	—
1450	58	1454.2	1505.0	1555.8	1619.3	1473.2	1536.7	1587.5	1663.7	—	—	—	—
1500	60	1517.7	1568.5	1619.3	1682.8	1530.4	1593.9	1644.7	1733.6	—	—	—	—

ASME B16.20 large diameter series B

Applicable standard
ASME B16.20-2017 "Metallic Gaskets for Pipe Flanges"

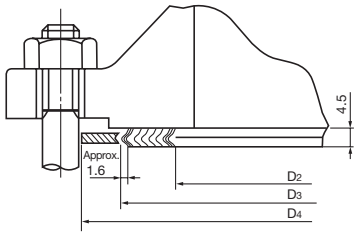
Applicable flange
ASME B16.47 2017"Large-Diameter Steel Flanges, series B"
API 605

Dimension Table 61

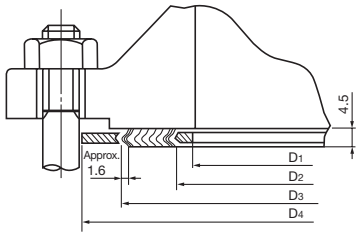
(Unit: mm)

Nominal flange diameter		Class 150				Class 300			
		Inner ring I.D D_1	Body		Outer ring O.D D_4	Inner ring I.D D_1	Body		Outer ring O.D D_4
A	B		I.D D_2	O.D D_3			I.D D_2	O.D D_3	
650	26	654.1	673.1	698.5	725.4	654.1	673.1	711.2	771.7
700	28	704.9	723.9	749.3	776.2	704.9	723.9	762.0	825.5
750	30	755.7	774.7	800.1	827.0	755.7	774.7	812.8	886.0
800	32	806.5	825.5	850.9	881.1	806.5	825.5	863.6	939.8
850	34	857.3	876.3	908.1	935.0	857.3	876.3	914.4	993.9
900	36	908.1	927.1	958.9	987.6	908.1	927.1	965.2	1047.8
950	38	958.9	974.6	1009.7	1044.7	971.6	1009.7	1047.8	1098.6
1000	40	1009.7	1022.4	1063.8	1095.5	1022.4	1060.5	1098.6	1149.4
1050	42	1060.5	1079.5	1114.6	1146.3	1085.9	1111.3	1149.4	1200.2
1100	44	1111.3	1124.0	1165.4	1197.1	1124.0	1162.1	1200.2	1251.0
1150	46	1162.1	1181.1	1224.0	1255.8	1178.1	1216.2	1254.3	1317.8
1200	48	1212.9	1231.9	1270.0	1306.6	1231.9	1263.7	1311.4	1368.6
1250	50	1263.7	1282.7	1325.6	1357.4	1267.0	1317.8	1355.9	1419.4
1300	52	1314.5	1333.5	1376.4	1408.2	1317.8	1368.6	1406.7	1470.2
1350	54	1365.3	1384.3	1422.4	1463.8	1365.3	1403.4	1454.2	1530.4
1400	56	1422.4	1444.8	1478.0	1514.6	1428.8	1479.6	1524.0	1593.9
1450	58	1478.0	1500.1	1528.8	1579.6	1484.4	1535.2	1573.3	1655.8
1500	60	1535.2	1557.3	1586.0	1630.4	1557.3	1589.0	1630.4	1706.6

* Please note that the inner ring inner diameter has been changed to a smaller size in ASME B16.20-1998.
* For bolts, we recommend high-strength alloy steel of SNB-7 or higher.



With outer ring



With inner and outer ring

* The outer diameter of the gasket body is the dimension of the mountain (convex part) that does not include the spring layers.

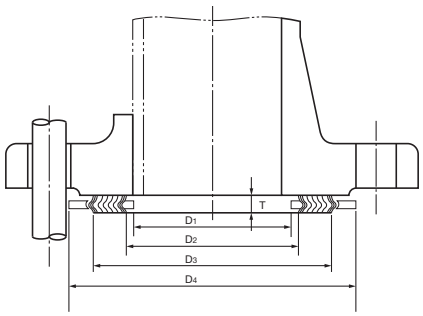
(Unit: mm)

Nominal flange diameter		Class 400				Class 600				Class 900			
		Inner ring	Body		Outer ring	Inner ring	Body		Outer ring	Inner ring	Body		Outer ring
A	B	I.D D_1	I.D D_2	O.D D_3	O.D D_4	I.D D_1	I.D D_2	O.D D_3	O.D D_4	I.D D_1	I.D D_2	O.D D_3	O.D D_4
650	26	654.1	666.8	698.5	746.3	644.7	663.7	714.5	765.3	666.8	692.2	749.3	838.2
700	28	701.8	714.5	749.3	800.1	685.8	704.9	755.7	819.2	717.6	743.0	800.1	901.7
750	30	752.6	765.3	806.5	857.3	752.6	778.0	828.8	879.6	781.1	806.5	857.3	958.9
800	32	800.1	812.8	860.6	911.4	793.8	831.9	882.7	933.5	838.2	863.6	914.4	1016.0
850	34	850.9	866.9	911.4	962.2	850.9	889.0	939.8	997.0	895.4	920.8	971.6	1073.2
900	36	898.7	917.7	965.2	1022.4	901.7	939.8	990.6	1047.8	920.8	946.2	997.0	1124.0
950	38	952.5	971.6	1022.4	1073.2	952.5	990.6	1041.4	1104.9	1009.7	1035.1	1085.9	1200.2
1000	40	1000.3	1025.7	1076.5	1127.3	1009.7	1047.8	1098.6	1155.7	1060.5	1098.6	1149.4	1251.0
1050	42	1051.1	1076.5	1127.3	1178.1	1066.8	1104.9	1155.7	1219.2	1111.3	1149.4	1200.2	1301.8
1100	44	1104.9	1130.3	1181.1	1231.9	1111.3	1162.1	1212.9	1270.0	1155.7	1206.5	1257.3	1368.6
1150	46	1168.4	1193.8	1244.6	1289.1	1162.1	1212.9	1263.7	1327.2	1219.2	1270.0	1320.8	1435.1
1200	48	1206.5	1244.6	1295.4	1346.2	1219.2	1270.0	1320.8	1390.7	1270.0	1320.8	1371.6	1485.9
1250	50	1257.3	1295.4	1346.2	1403.4	1270.0	1320.8	1371.6	1447.8	—	—	—	—
1300	52	1308.1	1346.2	1397.0	1454.2	1320.8	1371.6	1422.4	1498.6	—	—	—	—
1350	54	1352.6	1403.4	1454.2	1517.7	1378.0	1428.8	1479.6	1555.8	—	—	—	—
1400	56	1403.4	1454.2	1505.0	1568.5	1428.8	1479.6	1530.4	1612.9	—	—	—	—
1450	58	1454.2	1505.0	1555.8	1619.3	1473.2	1536.7	1587.5	1663.7	—	—	—	—
1500	60	1517.7	1568.5	1619.3	1682.8	1530.4	1593.9	1644.7	1733.6	—	—	—	—

For taylor forge

Applicable standard
This dimension table is set by NICHIAS based on TAYLOR FORGE and LADISH flanges.

Applicable flange
TAYLOR FORGE class 175, 350, 125, 250, LADISH class 150, 300



Dimension Table 62

(Unit: mm)

Nominal flange diameter		TAYLOR FORGE Class 175 LADISH Class 150				TAYLOR FORGE Class 350 LADISH Class 300				TAYLOR FORGE Class 125				TAYLOR FORGE Class 250			
A	B	Inner ring I.D D_1	I.D D_2	O.D D_3	Outer ring O.D D_4	Inner ring I.D D_1	I.D D_2	O.D D_3	Outer ring O.D D_4	Inner ring I.D D_1	I.D D_2	O.D D_3	Outer ring O.D D_4	Inner ring I.D D_1	I.D D_2	O.D D_3	Outer ring O.D D_4
650	26	660	680	703	740	660	680	712	752	650	675	725	774	650	675	725	831
700	28	711	731	754	791	711	731	763	803	701	726	776	831	701	726	776	895
750	30	762	782	809	848	762	782	814	860	752	777	827	882	752	777	827	952
800	32	813	833	860	899	813	833	865	911	803	828	878	939	803	828	878	1009
850	34	864	884	915	952	864	884	916	962	854	879	929	990	854	879	929	1060
900	36	914	934	965	1003	914	934	966	1026	904	929	979	1047	904	929	979	1117
950	38	965	985	1016	1054	965	985	1017	1076	955	985	1035	1111	955	985	1035	1168
1000	40	1016	1041	1074	1105	1016	1041	1081	1127	1006	1036	1086	1162	1006	1036	1086	1225
1050	42	1067	1092	1130	1165	1067	1092	1132	1184	1057	1087	1137	1219	1057	1087	1137	1289
1100	44	1118	1143	1181	1216	1118	1143	1183	1245	1108	1138	1188	1276	1108	1138	1188	1346
1150	46	1168	1193	1231	1267	1168	1193	1233	1295	1158	1188	1238	1327	1158	1188	1238	1403
1200	48	1219	1244	1282	1318	1219	1244	1284	1346	1209	1239	1289	1384	1209	1239	1289	1492
1250	50	1270	1295	1333	1368	—	—	—	—	1260	1290	1340	1435	—	—	—	—
1300	52	1321	1346	1386	1426	1321	1351	1401	1457	1311	1341	1391	1492	—	—	—	—
1350	54	1372	1397	1437	1476	1372	1402	1452	1508	1362	1392	1442	1549	—	—	—	—
1500	60	1524	1549	1589	1629	1524	1554	1604	1661	1514	1544	1594	1714	—	—	—	—
1650	66	1676	1706	1746	1781	1702	1742	1782	1842	1745	1785	1825	1885	—	—	—	—
1800	72	1829	1859	1899	1946	1854	1894	1934	1994	1911	1951	1991	2051	—	—	—	—
2100	84	2162	2202	2232	2292	2197	2237	2267	2327	2244	2284	2314	2374	—	—	—	—
2400	96	2467	2507	2537	2597	2512	2552	2582	2642	2568	2608	2638	2698	—	—	—	—

* For bolts, we recommend high-strength alloy steel of SNB-7 or higher.

For BS 1560 pipe flanges

Applicable standard
BS 3381: 1973
* Gasket dimensions of 3-1/2B of class 150-600 and 1/2-12B of class 2500 and all inner ring inner diameter dimensions are set by NICHIAS.

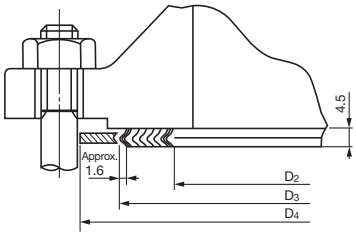
Applicable flange
BS 1560
** VORTEX gasket dimensions for JPI pipe flange (inner) with outer ring can also be applied to this flange.

Dimension Table 63

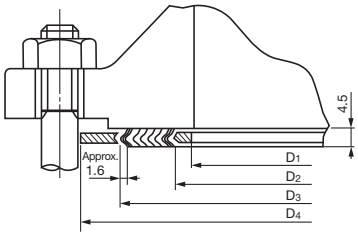
(Unit: mm)

Nominal flange diameter		Class 150				Class 300				Class 400				Class 600			
A	B	Inner ring I.D D_1	I.D D_2	O.D D_3	Outer ring O.D D_4	Inner ring I.D D_1	I.D D_2	O.D D_3	Outer ring O.D D_4	Inner ring I.D D_1	I.D D_2	O.D D_3	Outer ring O.D D_4	Inner ring I.D D_1	I.D D_2	O.D D_3	Outer ring O.D D_4
15	1/2	14.2	19.1	31.8	47.6	14.2	19.1	31.8	54.0	14.2	19.1	31.8	54.0	14.2	19.1	31.8	54.0
20	3/4	20.6	27.0	39.7	57.2	20.6	25.4	39.7	66.7	20.6	25.4	39.7	66.7	20.6	25.4	39.7	66.7
25	1	26.9	33.3	47.6	66.7	26.9	31.8	47.6	73.0	26.9	31.8	47.6	73.0	26.9	31.8	47.6	73.0
32	1 1/4	38.1	46.0	60.3	76.2	38.1	44.5	60.3	82.6	38.1	44.5	60.3	82.6	38.1	44.5	60.3	82.6
40	1 1/2	44.4	54.0	69.9	85.7	44.4	50.8	69.9	95.3	44.4	50.8	69.9	95.3	44.4	50.8	69.9	95.3
50	2	55.6	69.9	85.7	104.8	55.6	66.7	85.7	111.1	55.6	66.7	85.7	111.1	55.6	66.7	85.7	111.1
65	2 1/2	66.5	82.6	98.4	123.8	66.5	79.4	98.4	130.2	66.5	79.4	98.4	130.2	66.5	79.4	98.4	130.2
80	3	81.0	101.6	120.7	136.5	81.0	95.3	120.7	149.2	81.0	95.3	120.7	149.2	81.0	95.3	120.7	149.2
90	3 1/2	93.7	114.3	133.3	161.9	93.7	114.3	133.3	165.1	93.7	114.3	133.3	161.9	93.7	114.3	133.3	161.9
100	4	106.4	127.0	149.2	174.6	106.4	120.7	149.2	181.0	106.4	120.7	149.2	177.8	106.4	120.7	149.2	193.7
125	5	131.8	154.0	177.8	196.9	131.8	147.6	177.8	215.9	131.8	147.6	177.8	212.7	131.8	147.6	177.8	241.3
150	6	157.2	181.0	209.6	222.3	157.2	174.6	209.6	250.8	157.2	174.6	209.6	247.7	157.2	174.6	209.6	266.7
200	8	215.9	231.8	263.5	279.4	215.9	225.4	263.5	308.0	209.6	225.4	263.5	304.8	209.6	225.4	263.5	320.7
250	10	268.2	287.3	317.5	339.7	268.2	281.0	317.5	362.0	260.4	281.0	317.5	358.8	260.4	281.0	317.5	400.1
300	12	317.5	339.7	374.7	409.6	317.5	333.4	374.7	422.3	317.5	333.4	374.7	419.1	317.5	333.4	374.7	457.2
350	14	349.2	371.5	406.4	450.9	349.2	365.1	406.4	485.8	349.2	365.1	406.4	482.6	349.2	365.1	406.4	492.1
400	16	400.0	422.3	463.6	514.4	400.0	415.9	463.6	539.8	400.0	415.9	463.6	536.6	400.0	415.9	463.6	565.2
450	18	449.3	476.3	527.1	549.3	449.3	469.9	527.1	596.9	449.3	469.9	527.1	593.7	449.3	469.9	527.1	612.8
500	20	500.1	527.1	577.9	606.4	500.1	520.7	577.9	654.1	500.1	520.7	577.9	647.7	500.1	520.7	577.9	682.6
600	24	603.2	631.8	685.8	717.6	603.2	625.5	685.8	774.7	603.2	625.5	685.8	768.4	603.2	625.5	685.8	790.6

* The gasket inside the bold border ☐ cannot be used for slip-on welding type flanges and screw type flanges.
* For bolts, we recommend high-strength alloy steel of SNB-7 or higher.



With outer ring



With inner and outer ring

(Unit: mm)

Nominal flange diameter		Class 900				Class 1500				Class 2500			
A	B	Inner ring I.D D_1	I.D D_2	O.D D_3	Outer ring O.D D_4	Inner ring I.D D_1	I.D D_2	O.D D_3	Outer ring O.D D_4	Inner ring I.D D_1	I.D D_2	O.D D_3	Outer ring O.D D_4
15	1/2	14.2	19.1	31.8	63.5	14.2	19.1	31.8	63.5	14.2	19.0	31.8	69.8
20	3/4	20.6	25.4	39.7	69.9	20.6	25.4	39.7	69.9	20.6	25.4	39.6	76.2
25	1	26.9	31.8	47.6	79.4	26.9	31.8	47.6	79.4	26.9	31.8	47.8	85.8
32	1 1/4	33.3	44.5	60.3	88.9	33.3	44.5	60.3	88.9	33.3	39.6	60.4	104.9
40	1 1/2	41.4	50.8	69.9	98.4	41.4	50.8	69.9	98.4	41.4	47.8	69.8	117.6
50	2	52.3	66.7	85.7	142.9	52.3	66.7	85.7	142.9	52.3	58.7	85.8	146.0
65	2 1/2	63.5	79.4	98.4	165.1	63.5	79.4	98.4	165.1	63.5	69.8	98.6	168.4
80	3	81.0	95.3	120.7	168.3	81.0	95.3	120.7	174.6	81.0	92.2	120.6	196.8
90	3 1/2	—	—	—	—	—	—	—	—	—	—	—	—
100	4	106.4	120.7	149.2	206.4	106.4	120.7	149.2	209.6	106.4	117.6	149.4	235.0
125	5	131.8	147.6	177.8	247.7	131.8	147.6	177.8	254.0	131.8	143.0	177.8	279.4
150	6	157.2	174.6	209.6	288.9	157.2	174.6	209.6	282.6	157.2	171.4	209.6	317.5
200	8	209.6	225.4	263.5	358.8	206.2	225.4	263.5	352.4	200.2	215.9	257.3	387.4
250	10	260.4	281.0	317.5	435.0	257.8	281.0	317.5	435.0	247.6	270.0	311.2	476.2
300	12	314.5	333.4	374.7	498.5	314.5	333.4	374.7	520.7	292.1	317.5	368.3	549.4
350	14	342.9	365.1	406.4	520.7	339.8	365.1	406.4	577.9	—	—	—	—
400	16	393.7	415.9	463.6	574.7	387.4	415.9	463.6	641.4	—	—	—	—
450	18	444.5	469.9	527.1	638.2	438.2	469.9	527.1	704.9	—	—	—	—
500	20	495.3	520.7	577.9	698.5	489.0	520.7	577.9	755.7	—	—	—	—
600	24	603.2	625.5	685.8	838.2	577.8	625.5	685.8	901.7	—	—	—	—

For BS 4504 or DIN flange

Applicable standard
BS 4865: Part2: 1973

Applicable flange
BS 4504 and DIN

Dimension Table 64

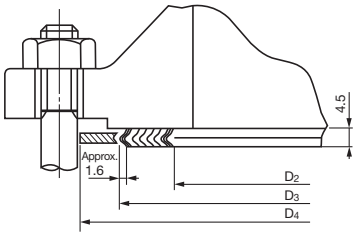
(Unit: mm)

Nominal flange diameter	10 bar				16 bar				25 bar				40 bar			
	Inner ring I.D D_1	I.D D_2	O.D D_3	Outer ring O.D D_4	Inner ring I.D D_1	I.D D_2	O.D D_3	Outer ring O.D D_4	Inner ring I.D D_1	I.D D_2	O.D D_3	Outer ring O.D D_4	Inner ring I.D D_1	I.D D_2	O.D D_3	Outer ring O.D D_4
10	15	24	36	48	15	24	36	48	15	24	36	48	15	24	36	48
15	19	28	40	53	19	28	40	53	19	28	40	53	19	28	40	53
20	24	34	47	63	24	34	47	63	24	34	47	63	24	34	47	63
25	30	41	55	73	30	41	55	73	30	41	55	73	30	41	55	73
32	39	50	66	84	39	50	66	84	39	50	66	84	39	50	66	84
40	45	56	72	94	45	56	72	94	45	56	72	94	45	56	72	94
50	56	68	86	109	56	68	86	109	56	68	86	109	56	68	86	109
65	72	84	103	129	72	84	103	129	72	84	103	129	72	84	103	129
80	84	97	117	144	84	97	117	144	84	97	117	144	84	97	117	144
100	108	123	144	164	108	123	144	164	108	123	144	170	108	123	144	170
125	133	148	170	194	133	148	170	194	133	148	170	196	133	148	170	196
150	160	177	200	220	160	177	200	220	160	177	200	226	160	177	200	226
175	184	200	224	250	184	200	224	250	184	200	224	256	184	200	224	268
200	209	229	255	275	209	229	255	275	209	229	255	286	209	229	255	293
250	262	283	310	330	262	283	310	331	262	283	310	343	262	283	310	355
300	311	332	360	380	311	332	360	386	311	332	360	403	311	332	360	420
350	343	375	405	440	343	375	405	446	343	375	405	460	343	375	405	477
400	401	426	458	491	401	426	458	498	401	426	458	517	401	426	458	549
450	452	477	512	541	452	477	512	558	452	477	512	567	—	—	—	—
500	503	528	566	596	503	528	566	620	503	528	566	627	503	528	566	631
600	597	635	675	698	597	635	675	737	597	635	675	734	597	635	675	750
700	697	735	777	813	697	735	777	807	697	735	777	836	697	735	777	855
800	798	836	878	920	798	836	878	914	798	836	878	945	798	836	878	978
900	896	934	979	1020	896	934	979	1014	896	934	979	1045	896	934	979	1088

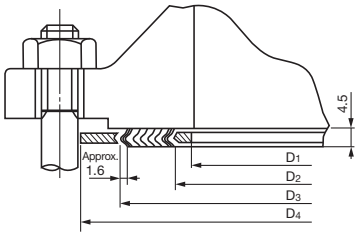
When using a gasket with a nominal pressure and flange nominal diameter in the bold border for a DIN flange, please use the dimensions shown in the table below.

Nominal flange diameter	10 bar				16 bar				25 bar				40 bar			
	Inner ring I.D D_1	I.D D_2	O.D D_3	Outer ring O.D D_4	Inner ring I.D D_1	I.D D_2	O.D D_3	Outer ring O.D D_4	Inner ring I.D D_1	I.D D_2	O.D D_3	Outer ring O.D D_4	Inner ring I.D D_1	I.D D_2	O.D D_3	Outer ring O.D D_4
65	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
100	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
200	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
350	355	375	405	440	355	375	405	446	355	375	405	460	355	375	405	477
400	406	426	458	491	406	426	458	498	406	426	458	517	406	426	458	549
500	508	528	566	596	508	528	566	620	508	528	566	627	508	528	566	631
600	610	635	675	698	610	635	675	737	610	635	675	734	610	635	675	750
700	710	735	777	813	710	735	777	807	710	735	777	836	710	735	777	855
800	811	836	878	920	811	836	878	914	811	836	878	945	811	836	878	978
900	909	934	979	1020	909	934	979	1014	909	934	979	1045	909	934	979	1088

* For bolts, we recommend high-strength alloy steel of SNB-7 or higher.



With outer ring



With inner and outer ring

(Unit: mm)

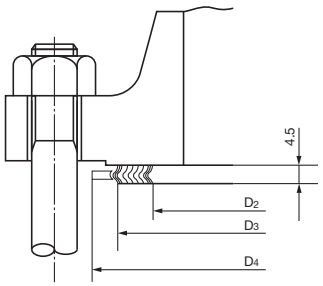
Nominal flange diameter	64 bar				100 bar				160 bar				250 bar			
	Inner ring I.D D_1	I.D D_2	O.D D_3	Outer ring O.D D_4	Inner ring I.D D_1	I.D D_2	O.D D_3	Outer ring O.D D_4	Inner ring I.D D_1	I.D D_2	O.D D_3	Outer ring O.D D_4	Inner ring I.D D_1	I.D D_2	O.D D_3	Outer ring O.D D_4
10	15	24	36	58	15	24	36	58	15	24	36	58	15	24	36	69
15	19	28	40	63	19	28	40	63	19	28	40	63	19	28	40	74
20	24	34	48	74	24	34	48	74	24	34	48	74	24	34	48	79
25	30	41	56	84	30	41	56	84	30	41	56	84	30	41	56	85
32	39	50	67	90	39	50	67	90	39	50	67	90	39	50	67	100
40	45	56	74	105	45	56	74	105	45	56	74	105	45	56	74	111
50	56	68	88	115	56	68	88	121	56	68	88	121	56	68	88	126
65	72	84	106	140	72	84	106	146	72	84	106	146	72	84	106	156
80	84	97	120	150	84	97	120	156	84	97	120	156	84	97	120	173
100	108	123	148	176	108	123	148	183	108	123	148	183	108	123	148	205
125	133	148	174	213	133	148	174	220	133	148	174	220	133	148	174	245
150	160	177	205	250	160	177	205	260	160	177	205	260	160	177	205	287
175	184	200	231	280	184	200	231	290	184	200	231	287	184	200	231	319
200	209	229	263	312	209	229	263	327	209	229	263	327	209	229	263	361
250	262	283	319	367	262	283	319	394	262	283	319	391	262	283	319	445
300	311	332	369	427	311	332	369	461	311	332	369	461	311	332	369	542
350	343	375	413	489	343	375	413	515	—	—	—	—	—	—	—	—
400	401	426	466	546	401	426	466	575	—	—	—	—	—	—	—	—
450	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
500	503	528	572	660	503	528	572	708	—	—	—	—	—	—	—	—
600	597	635	683	768	597	635	683	819	—	—	—	—	—	—	—	—
700	697	735	785	883	697	735	785	956	—	—	—	—	—	—	—	—
800	798	836	886	994	—	—	—	—	—	—	—	—	—	—	—	—
900	896	934	989	1114	—	—	—	—	—	—	—	—	—	—	—	—

Nominal flange diameter	64 bar				100 bar				160 bar				250 bar			
	Inner ring I.D D_1	I.D D_2	O.D D_3	Outer ring O.D D_4	Inner ring I.D D_1	I.D D_2	O.D D_3	Outer ring O.D D_4	Inner ring I.D D_1	I.D D_2	O.D D_3	Outer ring O.D D_4	Inner ring I.D D_1	I.D D_2	O.D D_3	Outer ring O.D D_4
65	—	—	—	—	—	—	—	—	72	81	102	146	72	81	102	156
100	—	—	—	—	—	—	—	—	108	120	142	183	—	—	—	—
200	—	—	—	—	—	—	—	—	209	225	256	327	—	—	—	—
350	355	375	413	489	355	375	413	515	—	—	—	—	—	—	—	—
400	406	426	466	546	406	426	466	575	—	—	—	—	—	—	—	—
500	508	528	572	660	508	528	572	708	—	—	—	—	—	—	—	—
600	610	635	683	768	610	635	683	819	—	—	—	—	—	—	—	—
700	710	735	785	883	710	735	785	956	—	—	—	—	—	—	—	—
800	811	836	886	994	—	—	—	—	—	—	—	—	—	—	—	—
900	909	934	989	1114	—	—	—	—	—	—	—	—	—	—	—	—

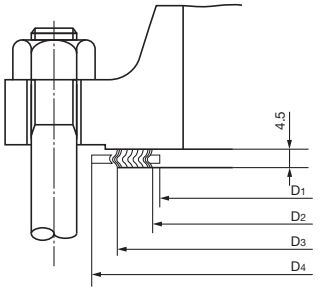
For TOMBO™ No.1839R series

Applicable standard
This dimension table was designed by NICHIAS based on JPI-7S-15-2011.

Applicable flange
JPI-7S-15-2011 "Pipe Flanges for the Petroleum Industry"
ASME B16.5 2017 "Pipe Flanges and Flanged Fittings"
MSS-SP-44-2016 "Steel Pipeline Flanges"



With outer ring



With inner and outer ring

Dimension Table 65

(Unit: mm)

Nominal flange diameter		Class 150				Class 300				Class 600			
		Inner ring	Body		Outer ring	Inner ring	Body		Outer ring	Inner ring	Body		Outer ring
A	B	I.D D_1	I.D D_2	O.D D_3	O.D D_4	I.D D_1	I.D D_2	O.D D_3	O.D D_4	I.D D_1	I.D D_2	O.D D_3	O.D D_4
15	1/2	17	23	33	47	17	23	33	53	17	23	33	53
20	3/4	23	29	41	57	23	29	41	66	23	29	41	66
25	1	30	36	48	66	30	36	48	73	30	36	48	73
32	1 1/4	41	47	60	76	41	47	60	82	41	47	60	82
40	1 1/2	45	53	68	85	45	53	68	95	45	53	68	95
50	2	58	66	82	104	58	66	82	111	58	66	82	111
65	2 1/2	71	81	97	123	71	81	97	129	71	81	97	129
80	3	91	101	117	136	91	101	117	148	89	99	117	148
90	3 1/2	100	112	130	162	100	112	130	164	98	110	130	161
100	4	115	127	146	174	115	127	146	180	109	121	146	193
125	5	141	155	175	196	141	153	175	215	135	147	175	241
150	6	170	186	206	222	166	182	206	250	158	174	206	266
200	8	220	240	260	279	220	236	260	307	209	230	260	320
250	10	271	290	314	339	267	287	314	360	254	274	314	400
300	12	321	347	371	409	321	341	371	420	309	329	371	457
350	14	351	377	403	450	351	371	403	484	339	366	403	492
400	16	402	424	460	514	402	422	460	539	392	420	460	564
450	18	465	487	523	549	455	483	523	595	448	483	523	612
500	20	514	534	574	606	504	534	574	652	495	534	574	682
600	24	620	642	682	717	610	642	682	774	603	642	682	790

Kammprofile Gaskets

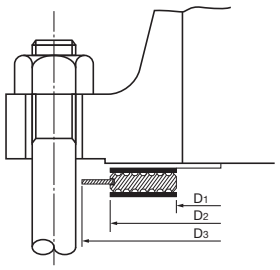
Applicable gaskets

- TOMBO™ No.1891-GR
- TOMBO™ No.1891-TF

ASME B16.20-2017

Applicable standard
ASME B16.20-2017 "Metallic Gaskets for Pipe Flanges"

Applicable flange
ASME B16.5 2017 "Pipe Flanges and Flanged Fittings"
JPI-7S-15-2011 "Pipe Flanges for the Petroleum Industry"



Dimension Table 66

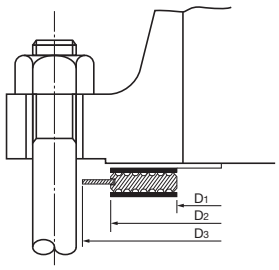
(Unit: mm)

Nominal flange diameter		Body I.D D_1	Body O.D D_2	Outer ring O.D D_3							Product Thickness	Outer ring thickness
A	B			Class 150	Class 300	Class 400	Class 600	Class 900	Class 1500	Class 2500		
15	1/2	23.1	33.3	47.8	54.1	Dimensions for Class 400 1/2B to 3B and Class 600 are the same.	54.1	Dimensions for Class 900 1/2B – 2-1/2B and Class 1500 are the same.	63.5	69.9	4.0	1.0
20	3/4	28.7	39.6	57.2	66.8		66.8		69.9	76.2		
25	1	36.6	47.5	66.8	73.2		73.2		79.5	85.9		
32	1 1/4	44.5	60.2	76.2	82.6		82.6		88.9	104.9		
40	1 1/2	52.3	69.9	85.9	95.3		95.3		98.6	117.6		
50	2	69.9	88.9	104.9	111.3		111.3		143.0	146.1		
65	2 1/2	82.6	101.6	124.0	130.3		130.3		165.1	168.4		
80	3	98.3	123.7	136.7	149.4		149.4	168.4	174.8	196.9		
90	3 1/2	111.1	136.5	161.9	165.1	161.9	161.9	—	—	—		
100	4	123.7	153.9	174.8	181.1	177.8	193.8	206.5	209.6	235.0		
125	5	150.9	182.6	196.9	215.9	212.9	241.3	247.7	254.0	279.4		
150	6	177.8	212.6	222.3	251.0	247.7	266.7	289.1	282.7	317.5		
200	8	228.6	266.7	279.4	308.1	304.8	320.8	358.9	352.6	387.4		
250	10	282.7	320.8	339.9	362.0	358.9	400.1	435.1	435.1	476.3		
300	12	339.6	377.7	409.7	422.4	419.1	457.2	498.6	520.7	549.4		
350	14	371.6	409.7	450.9	485.9	482.6	492.3	520.7	577.9	—		
400	16	422.4	466.6	514.4	539.8	536.7	565.2	574.8	641.4	—		
450	18	479.3	530.1	549.4	596.9	593.9	612.9	638.3	704.9	—		
500	20	530.1	580.9	606.6	654.1	647.7	682.8	698.5	755.7	—		
550	22	581.0	631.8	660.4	704.8	701.8	733.6	—	—	—		
600	24	631.7	682.5	717.6	774.7	768.4	790.7	838.2	901.7	—		

Large diameter series A

Applicable standard
ASME B16.20-2017 "Metallic Gaskets for Pipe Flanges"

Applicable flange
ASME B16.47 2017 "Large Diameter Steel Flanges, series A"
JPI-7S-43 2008 "Large Diameter Carbon Steel Flanges for the Petroleum Industry" (Series A)



Dimension Table 67

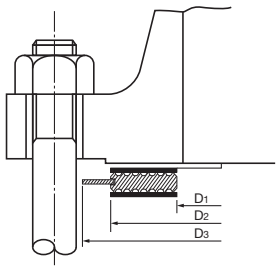
(Unit: mm)

Nominal flange diameter		Class 150			Class 300			Class 400			Class 600			Class 900			Product Thickness	Outer ring thickness
A	B	Body I.D D_1	Body O.D D_2	Outer ring O.D D_3	Body I.D D_1	Body O.D D_2	Outer ring O.D D_3	Body I.D D_1	Body O.D D_2	Outer ring O.D D_3	Body I.D D_1	Body O.D D_2	Outer ring O.D D_3	Body I.D D_1	Body O.D D_2	Outer ring O.D D_3		
650	26	673.1	704.9	774.7	685.8	736.6	835.2	685.8	736.6	831.9	685.8	736.6	866.9	685.8	736.6	882.7		
700	28	723.9	755.7	831.9	736.6	787.4	898.7	736.6	787.4	892.3	736.6	787.4	914.4	736.6	787.4	946.2		
750	30	774.7	806.5	882.7	793.8	844.6	952.5	793.8	844.6	946.2	793.8	844.6	971.6	793.8	844.6	1009.7		
800	32	825.5	860.6	939.8	850.9	901.7	1006.6	850.9	901.7	1003.3	850.9	901.7	1022.4	850.9	901.7	1073.2		
850	34	876.3	911.4	990.6	901.7	952.5	1057.4	901.7	952.5	1054.1	901.7	952.5	1073.2	901.7	952.5	1136.7		
900	36	927.1	968.5	1047.8	955.8	1006.6	1117.6	955.8	1006.6	1117.6	955.8	1006.6	1130.3	958.9	1009.7	1200.2		
950	38	977.9	1019.3	1111.3	977.9	1016.0	1054.1	971.6	1022.4	1073.2	990.6	1041.4	1104.9	1035.1	1085.9	1200.2		
1000	40	1028.7	1070.1	1162.1	1022.4	1070.1	1114.6	1025.7	1076.5	1127.3	1047.8	1098.6	1155.7	1098.6	1149.4	1251.0		
1050	42	1079.5	1124.0	1219.2	1073.2	1120.9	1165.4	1076.5	1127.3	1178.1	1104.9	1155.7	1219.2	1149.4	1200.2	1301.8		
1100	44	1130.3	1178.1	1276.4	1130.3	1181.1	1219.2	1130.3	1181.1	1231.9	1162.1	1212.9	1270.0	1206.5	1257.3	1368.6	4.0	1.0
1150	46	1181.1	1228.9	1327.2	1178.1	1228.9	1273.3	1193.8	1244.6	1289.1	1212.9	1263.7	1327.2	1270.0	1320.8	1435.1		
1200	48	1231.9	1279.9	1384.3	1235.2	1286.0	1324.1	1244.6	1295.4	1346.2	1270.0	1320.8	1390.7	1320.8	1371.6	1485.9		
1250	50	1282.7	1333.5	1435.1	1295.4	1346.2	1378.0	1295.4	1346.2	1403.4	1320.8	1371.6	1447.8	—	—	—		
1300	52	1333.5	1384.3	1492.3	1346.2	1397.0	1428.8	1346.2	1397.0	1454.2	1371.6	1422.4	1498.6	—	—	—		
1350	54	1384.3	1435.1	1549.4	1403.4	1454.2	1492.3	1403.4	1454.2	1517.7	1428.8	1479.6	1555.8	—	—	—		
1400	56	1435.1	1485.9	1606.6	1454.2	1505.0	1543.1	1454.2	1505.0	1568.5	1479.6	1530.4	1612.9	—	—	—		
1450	58	1485.9	1536.7	1663.7	1511.3	1562.1	1593.9	1505.0	1555.8	1619.3	1536.7	1587.5	1663.7	—	—	—		
1500	60	1536.7	1587.5	1714.5	1562.1	1612.9	1644.7	1568.5	1619.3	1682.8	1593.9	1644.7	1733.6	—	—	—		

Large diameter series B

Applicable standard
ASME B16.20-2017 "Metallic Gaskets for Pipe Flanges"

Applicable flange
ASME B16.47 2017 "Large Diameter Steel Flanges, series B"
JPI-7S-43 2008 "Large Diameter Carbon Steel Flanges for the Petroleum Industry" (Series B)



Dimension Table 68

(Unit : mm)

Nominal flange diameter		Class 150			Class 300			Class 400			Class 600			Class 900			Product Thickness	Outer ring thickness
A	B	Body I.D D_1	Body O.D D_2	Outer ring O.D D_3	Body I.D D_1	Body O.D D_2	Outer ring O.D D_3	Body I.D D_1	Body O.D D_2	Outer ring O.D D_3	Body I.D D_1	Body O.D D_2	Outer ring O.D D_3	Body I.D D_1	Body O.D D_2	Outer ring O.D D_3		
650	26	673.1	698.5	725.4	673.1	711.2	771.7	666.8	698.5	746.3	663.7	714.5	765.3	692.2	749.3	838.2	4.0	1.0
700	28	723.9	749.3	776.2	723.9	762.0	825.5	714.5	749.3	800.1	704.9	755.7	819.2	743.0	800.1	901.7		
750	30	774.7	800.1	827.0	774.7	812.8	886.0	765.3	806.5	857.3	778.0	828.8	879.6	806.5	857.3	958.9		
800	32	825.5	850.9	881.1	825.5	863.6	939.8	812.8	860.6	911.4	831.9	882.7	933.5	863.6	914.4	1016.0		
850	34	876.3	908.1	935.0	876.3	914.4	993.9	866.9	911.4	962.2	889.0	939.8	997.0	920.8	971.6	1073.2		
900	36	927.1	958.9	987.6	927.1	965.2	1047.8	917.7	965.2	1022.4	939.8	990.6	1047.8	946.2	997.0	1124.0		
950	38	974.9	1009.7	1044.7	1009.7	1047.8	1098.6	971.6	1022.4	1073.2	990.6	1041.4	1104.9	1035.1	1085.9	1200.2		
1000	40	1022.4	1063.8	1095.5	1060.5	1098.6	1149.4	1025.7	1076.5	1127.3	1047.8	1098.6	1155.7	1098.6	1149.4	1251.0		
1050	42	1079.5	1114.6	1146.3	1111.3	1149.4	1200.2	1076.5	1127.3	1178.1	1104.9	1155.7	1219.2	1149.4	1200.2	1301.8		
1100	44	1124.0	1165.4	1197.1	1162.1	1200.2	1251.0	1130.3	1181.1	1231.9	1162.1	1212.9	1270.0	1206.5	1257.3	1368.6		
1150	46	1181.1	1224.0	1255.8	1216.2	1254.3	1317.8	1193.8	1244.6	1289.1	1212.9	1263.7	1327.2	1270.0	1320.8	1435.1		
1200	48	1231.9	1270.0	1306.6	1263.7	1311.4	1368.6	1244.6	1295.4	1346.2	1270.0	1320.8	1390.7	1320.8	1371.6	1485.9		
1250	50	1282.7	1325.6	1357.4	1317.8	1355.9	1419.4	1295.4	1346.2	1403.4	1320.8	1371.6	1447.8	—	—	—		
1300	52	1333.5	1376.4	1408.2	1368.6	1406.7	1470.2	1346.2	1397.0	1454.2	1371.6	1422.4	1498.6	—	—	—		
1350	54	1384.3	1422.4	1463.8	1403.4	1454.2	1530.4	1403.4	1454.2	1517.7	1428.8	1479.6	1555.8	—	—	—		
1400	56	1444.8	1478.0	1514.6	1479.6	1524.0	1593.9	1454.2	1505.0	1568.5	1479.6	1530.4	1612.9	—	—	—		
1450	58	1500.6	1528.8	1579.6	1535.2	1573.3	1655.8	1505.0	1555.8	1619.3	1536.7	1587.5	1663.7	—	—	—		
1500	60	1557.3	1586.0	1630.4	1589.0	1630.4	1706.6	1568.5	1619.3	1682.8	1593.9	1644.7	1733.6	—	—	—		

Metal Jacketed Gaskets

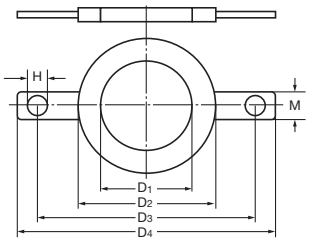
Applicable gaskets

• TOMBO™ No.1841 Series

Metal jacket gasket with hanger

Applicable standard
This dimension table is set by NICHIAS based on JIS B 2220.

Applicable flange
JIS B 2220-2012 "Steel pipe flanges"



Dimension Table 69

(Unit: mm)

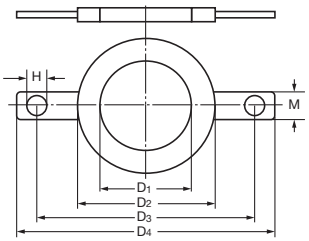
Nominal flange diameter		5K						10K						16.20K					
A	B	I.D D_1	O.D D_2	P.C.D D_3	Bolt hole diameter H	Hanger O.D D_4	Hanger width M	I.D D_1	O.D D_2	P.C.D D_3	Bolt hole diameter H	Hanger O.D D_4	Hanger width M	I.D D_1	O.D D_2	P.C.D D_3	Bolt hole diameter H	Hanger O.D D_4	Hanger width M
10	3/8	19	34	55	12	75	25	28	41	65	15	90	25	28	41	65	15	90	25
15	1/2	22	39	60	12	80	25	33	46	70	15	95	25	33	46	70	15	95	25
20	3/4	29	44	65	12	85	25	38	51	75	15	100	25	38	51	75	15	100	25
25	1	39	54	75	12	95	25	47	62	90	19	125	29	47	62	90	19	125	29
32	1 1/4	50	65	90	15	115	25	56	71	100	19	135	29	56	71	100	19	135	29
40	1 1/2	54	70	95	15	120	25	61	76	105	19	140	29	61	76	105	19	140	29
50	2	64	80	105	15	130	25	76	91	120	19	155	29	71	91	120	19	155	29
65	2 1/2	90	105	130	15	155	25	94	111	140	19	175	29	91	111	140	19	175	29
80	3	101	116	145	19	180	29	104	121	150	19	185	29	107	127	160	23	200	32
90	3 1/2	110	126	155	19	190	29	114	131	160	19	195	29	120	140	170	23	210	32
100	4	119	136	165	19	200	29	129	146	175	19	210	29	132	155	185	23	225	32
125	5	153	171	200	19	235	29	160	177	210	23	250	32	167	190	225	25	270	35
150	6	183	201	230	19	265	29	193	207	240	23	280	32	202	225	260	25	305	35
175	7	207	227	260	23	300	32	213	232	265	23	305	32	—	—	—	—	—	—
200	8	229	247	280	23	320	32	238	257	290	23	330	32	247	270	305	25	350	35
225	9	250	272	305	23	345	32	258	277	310	23	350	32	—	—	—	—	—	—
250	10	290	312	345	23	385	32	298	319	355	25	400	35	317	340	380	27	430	39
300	12	335	355	390	23	430	32	341	363	400	25	445	35	363	390	430	27	480	39
350	14	378	398	435	25	480	35	386	408	445	25	490	35	408	435	480	33	540	45
400	16	438	458	495	25	540	35	448	470	510	27	560	39	463	490	540	33	605	45
450	18	498	518	555	25	605	35	503	525	565	27	620	39	528	555	605	33	675	45
500	20	550	568	605	25	655	35	558	580	620	27	675	39	583	610	660	33	730	45
550	22	603	625	665	27	720	40	611	635	680	33	745	45	638	665	720	39	795	50
600	24	653	675	715	27	770	40	661	685	730	33	795	45	688	715	770	39	845	50

* Do not use this gasket unless it is unavoidable. Please use it together with the high temperature gasket paste.
* For bolts, we recommend high-strength alloy steel of SNB-7 or higher.

Metal jacket gasket with hanger

Applicable standard
This dimension table is set by NICHIAS based on JPI-7S-15-2011.

Applicable flange
JPI-7S-15-2011 "Pipe Flanges for the Petroleum Industry"
ASME B16.5 2017 "Pipe Flanges and Flanged Fittings"



Dimension Table 70

(Unit: mm)

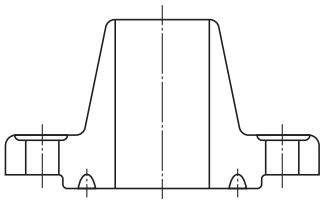
Nominal flange diameter		Class 150						Class 300					
A	B	I.D D_1	O.D D_2	P.C.D D_3	Bolt hole diameter H	Hanger O.D D_4	Hanger width M	I.D D_1	O.D D_2	P.C.D D_3	Bolt hole diameter H	Hanger O.D D_4	Hanger width M
15	1/2	22	35	60	16	89	26	22	35	67	16	95	26
20	3/4	28	43	70	16	98	26	28	43	83	20	117	29
25	1	34	51	79	16	108	26	34	51	89	20	124	29
32	1 1/4	44	59	89	16	117	26	44	59	98	20	133	29
40	1 1/2	53	68	98	16	127	26	53	68	114	23	156	32
50	2	68	87	121	20	152	29	68	87	127	20	165	29
65	2 1/2	84	100	140	20	178	29	84	100	149	23	191	32
80	3	106	122	152	20	191	29	106	122	168	23	210	32
90	3 1/2	117	135	178	20	216	29	117	135	184	23	229	32
100	4	134	152	191	20	229	29	134	152	200	23	254	32
125	5	163	181	216	23	254	32	163	181	235	23	279	32
150	6	193	211	241	23	279	32	193	211	270	23	318	32
200	8	248	265	298	23	343	32	248	265	330	26	381	36
250	10	300	319	362	26	406	36	300	319	387	29	445	39
300	12	357	376	432	26	483	36	357	376	451	32	520	42
350	14	388	408	476	29	535	39	388	408	514	32	585	42
400	16	445	465	540	29	595	39	442	465	572	35	650	45
450	18	508	528	578	32	635	42	508	528	629	35	710	45
500	20	555	579	635	32	700	42	557	579	686	35	775	45
600	24	663	687	749	35	815	45	663	687	813	42	915	52

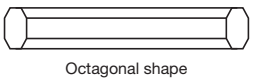
Ring Joint Gaskets

Applicable gaskets

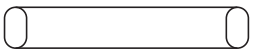
- TOMBO™ No.1850C Series
- TOMBO™ No.1850V Series
- TOMBO™ No.1850RX Series

Ring number and applicable flange





Octagonal shape



Oval shape

TOMBO No.1850-C
TOMBO No.1850-V

Dimension Table 71

Nominal flange diameter		Class 150	Class 300	Class 400	Class 600	Class 900	Class 1500	Class 2500
A	B							
15	1/2	—	R11	R11	R11	R12	R12	R13
20	3/4	—	R13	R13	R13	R14	R14	R16
25	1	R15	R16	R16	R16	R16	R16	R18
(32)	(1 1/4)	R17	R18	R18	R18	R18	R18	R21
40	1 1/2	R19	R20	R20	R20	R20	R20	R23
50	2	R22	R23	R23	R23	R24	R24	R26
65	2 1/2	R25	R26	R26	R26	R27	R27	R28
80	3	R29	R31 Note 1	R31 Note 1	R31 Note 1	R31	R35	R32
(90)	(3 1/2)	R33	R34	R34	R34	—	—	—
100	4	R36	R37	R37	R37	R37	R39	R38
(125)	(5)	R40	R41	R41	R41	R41	R44	R42
150	6	R43	R45	R45	R45	R45	R46	R47
200	8	R48	R49	R49	R49	R49	R50	R51
250	10	R52	R53	R53	R53	R53	R54	R55
300	12	R56	R57	R57	R57	R57	R58	R60
350	14	R59	R61	R61	R61	R62	R63	—
400	16	R64	R65	R65	R65	R66	R67	—
450	18	R68	R69	R69	R69	R70	R71	—
500	20	R72	R73	R73	R73	R74	R75	—
550	22	R80	R81	R81	R81	—	—	—
600	24	R76	R77	R77	R77	R78	R79	—
650	26	—	R93	R93	R93	R100	—	—
700	28	—	R94	R94	R94	R101	—	—
750	30	—	R95	R95	R95	R102	—	—
800	32	—	R96	R96	R96	R103	—	—
850	34	—	R97	R97	R97	R104	—	—
900	36	—	R98	R98	R98	R105	—	—

Note 1: For the loose flange (lap joint), use R30.
* Oval type or octagonal type may be used for the same groove (same R number).
* The flange nominal diameter in ( ) should not be used as much as possible.

Ring number and applicable flange

Dimension Table 72

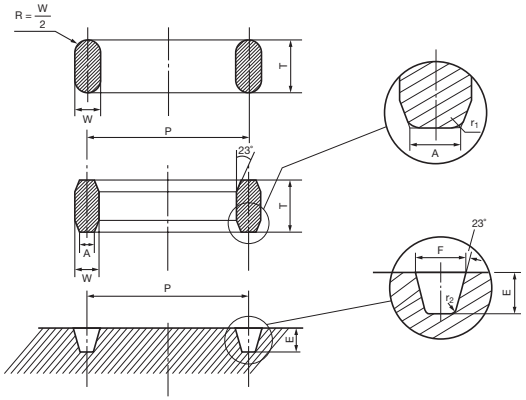
Nominal flange diameter	Old nominal flange diameter	API Spec 6A Flange								
		6B Flange, 6BX Flange						Segment flange	Clamp connector	
		2000 PSI	3000 PSI	5000 PSI	10000 PSI	15000 PSI	20000 PSI	5000 PSI	5000 PSI	10000 PSI
1 3/8	1 1/4	—	—	—	—	—	—	RX201	—	—
1 11/16	—	—	—	—	BX—150	BX—150	—	—	—	—
1 13/16	1 1/2 (Note 1)	RX20	RX20	RX20	BX—151	BX—151	BX—151	RX205	—	RX20
2 1/16	2	RX23	RX24	RX24	BX—152	BX—152	BX—152	RX20	RX23	RX23
2 9/16	2 1/2	RX26	RX27	RX27	BX—153	BX—153	BX—153	RX210	RX24	RX24
3 1/16	—	—	—	—	BX—154	BX—154	BX—154	—	—	RX27
3 1/8	3	RX31	RX31	RX35	—	—	—	RX25	RX27	—
4 1/16	4	RX37	RX37	RX39	BX—155	BX—155	BX—155	RX215	RX35	RX35
4 1/16×4 1/4	4×4 1/4	—	—	—	—	—	—	RX215	—	—
5 1/8	5	RX41	RX41	RX44	BX—169	—	—	—	RX39	—
7 1/16	6	RX45	RX45	RX46	BX—156	BX—156	BX—156	—	RX45	RX45
9	8	RX49	RX49	RX50	BX—157	BX—157	BX—157	—	RX49	RX49
11	10	RX53	RX53	RX54	BX—158	BX—158	BX—158	—	RX53	RX53
13 5/8	12	RX57	RX57	BX—160	BX—159	BX—159	BX—159	—	RX57	RX57
16 3/4	16	RX65	RX66	BX—162	BX—162	—	—	—	RX65	RX65
17 3/4	18	RX69	RX70	—	—	—	—	—	—	—
18 3/4	—	—	—	BX—163	BX—164	BX—164	—	—	—	RX69
20 3/4	20	—	RX74	—	—	—	—	—	—	—
21 1/4	20	RX73	—	BX—165	BX—166	—	—	—	—	RX73
26 3/4	—	BX—167	BX—168	—	—	—	—	—	—	—

Note 1: The old flange nominal diameter for segmented flanges is 1-3/4.

Octagonal and oval

Applicable standard
JPI-7S-23-2018
"Ring Joint Gaskets and Grooves for Petroleum Industry"

Applicable flange
JPI-7S-15-2011 "Pipe Flanges for the Petroleum Industry"
JPI-7S-43-2008 "Large Diameter Carbon Steel Flanges for the Petroleum Industry"
ASME B16.5 2017 "Pipe Flanges and Flanged Fittings"
ASME B16.47 2017 "Large-Diameter Steel Flanges"
API Spec 6A "Wellhead Equipment"
MSS-SP-44-2016 "Steel Pipeline Flanges"



Dimension Table 73

(Unit: mm)

Ring No.	Pitch diameter P	Gasket dimensions					Groove dimensions		
		Gasket width W	Gasket height T		Width of octagonal plane A	Octagonal shape radius r_1	Depth E	Width F	Radius r_2
			Oval	Octagonal					
R 11	34.14	6.35	11.2	9.7	4.32	1.5	5.56	7.14	0.8
R 12	39.67	7.92	14.2	12.7	5.23	1.5	6.35	8.74	0.8
R 13	42.88	7.92	14.2	12.7	5.23	1.5	6.35	8.74	0.8
R 14	44.45	7.92	14.2	12.7	5.23	1.5	6.35	8.74	0.8
R 15	47.62	7.92	14.2	12.7	5.23	1.5	6.35	8.74	0.8
R 16	50.80	7.92	14.2	12.7	5.23	1.5	6.35	8.74	0.8
R 17	57.15	7.92	14.2	12.7	5.23	1.5	6.35	8.74	0.8
R 18	60.32	7.92	14.2	12.7	5.23	1.5	6.35	8.74	0.8
R 19	65.07	7.92	14.2	12.7	5.23	1.5	6.35	8.74	0.8
R 20	68.27	7.92	14.2	12.7	5.23	1.5	6.35	8.74	0.8
R 21	72.23	11.13	17.5	15.7	7.75	1.5	7.92	11.91	0.8
R 22	82.55	7.92	14.2	12.7	5.23	1.5	6.35	8.74	0.8
R 23	82.55	11.13	17.5	15.7	7.75	1.5	7.92	11.91	0.8
R 24	95.25	11.13	17.5	15.7	7.75	1.5	7.92	11.91	0.8
R 25	101.60	7.92	14.2	12.7	5.23	1.5	6.35	8.74	0.8
R 26	101.60	11.13	17.5	15.7	7.75	1.5	7.92	11.91	0.8
R 27	107.95	11.13	17.5	15.7	7.75	1.5	7.92	11.91	0.8
R 28	111.12	12.70	19.0	17.5	8.66	1.5	9.52	13.49	1.5
R 29	114.30	7.92	14.2	12.7	5.23	1.5	6.35	8.74	0.8
R 30	117.48	11.13	17.5	15.7	7.75	1.5	7.92	11.91	0.8
R 31	123.82	11.13	17.5	15.7	7.75	1.5	7.92	11.91	0.8
R 32	127.00	12.70	19.0	17.5	8.66	1.5	9.52	13.49	1.5
R 33	131.78	7.92	14.2	12.7	5.23	1.5	6.35	8.74	0.8
R 34	131.78	11.13	17.5	15.7	7.75	1.5	7.92	11.91	0.8
R 35	136.53	11.13	17.5	15.7	7.75	1.5	7.92	11.91	0.8
R 36	149.23	7.92	14.2	12.7	5.23	1.5	6.35	8.74	0.8
R 37	149.23	11.13	17.5	15.7	7.75	1.5	7.92	11.91	0.8
R 38	157.18	15.88	22.4	20.6	10.49	1.5	11.13	16.66	1.5
R 39	161.92	11.13	17.5	15.7	7.75	1.5	7.92	11.91	0.8
R 40	171.45	7.92	14.2	12.7	5.23	1.5	6.35	8.74	0.8
R 41	180.98	11.13	17.5	15.7	7.75	1.5	7.92	11.91	0.8
R 42	190.50	19.05	25.4	23.9	12.32	1.5	12.70	19.84	1.5
R 43	193.68	7.92	14.2	12.7	5.23	1.5	6.35	8.74	0.8
R 44	193.68	11.13	17.5	15.7	7.75	1.5	7.92	11.91	0.8
R 45	211.12	11.13	17.5	15.7	7.75	1.5	7.92	11.91	0.8
R 46	211.12	12.70	19.0	17.5	8.66	1.5	9.52	13.49	1.5
R 47	228.60	19.05	25.4	23.9	12.32	1.5	12.70	19.84	1.5
R 48	247.65	7.92	14.2	12.7	5.23	1.5	6.35	8.74	0.8
R 49	269.88	11.13	17.5	15.7	7.75	1.5	7.92	11.91	0.8

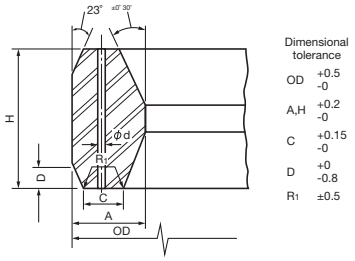
(Unit: mm)

Ring No.	Pitch diameter P	Gasket dimensions					Groove dimensions		
		Gasket width W	Gasket height T		Width of octagonal plane A	Octagonal shape radius r_1	Depth E	Width F	Radius r_2
			Oval	Octagonal					
R 50	269.88	15.88	22.4	20.6	10.49	1.5	11.13	16.66	1.5
R 51	279.40	22.22	28.4	26.9	14.81	1.5	14.27	23.01	1.5
R 52	304.80	7.92	14.2	12.7	5.23	1.5	6.35	8.74	0.8
R 53	323.85	11.13	17.5	15.7	7.75	1.5	7.92	11.91	0.8
R 54	323.85	15.88	22.4	20.6	10.49	1.5	11.13	16.66	1.5
R 55	342.90	28.58	36.6	35.1	19.81	2.3	17.48	30.18	2.3
R 56	381.00	7.92	14.2	12.7	5.23	1.5	6.35	8.74	0.8
R 57	381.00	11.13	17.5	15.7	7.75	1.5	7.92	11.91	0.8
R 58	381.00	22.22	28.4	26.9	14.81	1.5	14.27	23.01	1.5
R 59	396.88	7.92	14.2	12.7	5.23	1.5	6.35	8.74	0.8
R 60	406.40	31.75	39.6	38.1	22.33	2.3	17.48	33.32	2.3
R 61	419.10	11.13	17.5	15.7	7.75	1.5	7.92	11.91	0.8
R 62	419.10	15.88	22.4	20.6	10.49	1.5	11.13	16.66	1.5
R 63	419.10	25.40	33.3	31.8	17.30	2.3	15.88	26.97	2.3
R 64	454.02	7.92	14.2	12.7	5.23	1.5	6.35	8.74	0.8
R 65	469.90	11.13	17.5	15.7	7.75	1.5	7.92	11.91	0.8
R 66	469.90	15.88	22.4	20.6	10.49	1.5	11.13	16.66	1.5
R 67	469.90	28.58	36.6	35.1	19.81	2.3	17.48	30.18	2.3
R 68	517.53	7.92	14.2	12.7	5.23	1.5	6.35	8.74	0.8
R 69	533.40	11.13	17.5	15.7	7.75	1.5	7.92	11.91	0.8
R 70	533.40	19.05	25.4	23.9	12.32	1.5	12.70	19.84	1.5
R 71	533.40	28.58	36.6	35.1	19.81	2.3	17.48	30.18	2.3
R 72	558.80	7.92	14.2	12.7	5.23	1.5	6.35	8.74	0.8
R 73	584.20	12.70	19.0	17.5	8.66	1.5	9.52	13.49	1.5
R 74	584.20	19.05	25.4	23.9	12.32	1.5	12.70	19.84	1.5
R 75	584.20	31.75	39.6	38.1	22.33	2.3	17.48	33.32	2.3
R 76	673.10	7.92	14.2	12.7	5.23	1.5	6.35	8.74	0.8
R 77	692.15	15.88	22.4	20.6	10.49	1.5	11.13	16.66	1.5
R 78	692.15	25.40	33.3	31.8	17.30	2.3	15.88	26.97	2.3
R 79	692.15	34.92	44.4	41.1	24.82	2.3	20.62	36.53	2.3
R 80	615.95	7.92	—	12.7	5.23	1.5	6.35	8.74	0.8
R 81	635.00	14.27	—	19.0	9.58	1.5	11.13	15.09	1.5
R 82	57.15	11.13	—	15.7	7.75	1.5	7.92	11.91	0.8
R 84	63.50	11.13	—	15.7	7.75	1.5	7.92	11.91	0.8
R 85	79.38	12.70	—	17.5	8.66	1.5	9.52	13.49	1.5
R 86	90.50	15.88	—	20.6	10.49	1.5	11.13	16.66	1.5
R 87	100.03	15.88	—	20.6	10.49	1.5	11.13	16.66	1.5
R 88	123.82	19.05	—	23.9	12.32	1.5	12.70	19.84	1.5
R 89	114.30	19.05	—	23.9	12.32	1.5	12.70	19.84	1.5
R 90	155.58	22.22	—	26.9	14.81	1.5	14.27	23.01	1.5
R 91	260.35	31.75	—	38.1	22.33	2.3	17.48	33.32	2.3
R 92	228.60	11.13	17.5	15.7	7.75	1.5	7.92	11.91	0.8
R 93	749.30	19.05	—	23.9	12.32	1.5	12.70	19.84	1.5
R 94	800.10	19.05	—	23.9	12.32	1.5	12.70	19.84	1.5
R 95	857.25	19.05	—	23.9	12.32	1.5	12.70	19.84	1.5
R 96	914.40	22.22	—	26.9	14.81	1.5	14.27	23.01	1.5
R 97	965.20	22.22	—	26.9	14.81	1.5	14.27	23.01	1.5
R 98	1022.35	22.22	—	26.9	14.81	1.5	14.27	23.01	1.5
R 99	234.95	11.13	—	15.7	7.75	1.5	7.92	11.91	0.8
R100	749.30	28.58	—	35.1	19.81	2.3	17.48	30.18	2.3
R101	800.10	31.75	—	38.1	22.33	2.3	17.48	33.32	2.3
R102	857.25	31.75	—	38.1	22.33	2.3	17.48	33.32	2.3
R103	914.40	31.75	—	38.1	22.33	2.3	17.48	33.32	2.3
R104	965.20	34.93	—	41.4	24.82	2.3	20.62	36.53	2.3
R105	1022.35	34.93	—	41.4	24.82	2.3	20.62	36.53	2.3

RX rings

Applicable standard
API Spec 6A "Specification for Wellhead and Christmas Tree Equipment"

Applicable flange
API Spec 6A Wellhead Equipment 6B Flanges



Dimension Table 74

(Unit: mm)

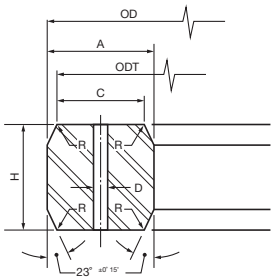
Ring No.	O.D OD	Width A	Width of flat part C	Height of outer incline D	Height H	R_1	Hole diameter ϕd
RX - 20	76.20	8.74	4.62	3.18	19.05	1.5	—
RX - 23	93.27	11.91	6.45	4.24	25.40	1.5	—
RX - 24	105.97	11.91	6.45	4.24	25.40	1.5	—
RX - 25	109.55	8.74	4.62	3.18	19.05	1.5	—
RX - 26	111.91	11.91	6.45	4.24	25.40	1.5	—
RX - 27	118.26	11.91	6.45	4.24	25.40	1.5	—
RX - 31	134.54	11.91	6.45	4.24	25.40	1.5	—
RX - 35	147.24	11.91	6.45	4.24	25.40	1.5	—
RX - 37	159.94	11.91	6.45	4.24	25.40	1.5	—
RX - 39	172.64	11.91	6.45	4.24	25.40	1.5	—
RX - 41	191.69	11.91	6.45	4.24	25.40	1.5	—
RX - 44	204.39	11.91	6.45	4.24	25.40	1.5	—
RX - 45	221.84	11.91	6.45	4.24	25.40	1.5	—
RX - 46	222.25	13.49	6.68	4.78	28.58	1.5	—
RX - 47	245.26	19.84	10.34	6.88	41.28	2.3	—
RX - 49	280.59	11.91	6.45	4.24	25.40	1.5	—
RX - 50	283.36	16.66	8.51	5.28	31.75	1.5	—
RX - 53	334.57	11.91	6.45	4.24	25.40	1.5	—
RX - 54	337.34	16.66	8.51	5.58	31.75	1.5	—
RX - 57	391.72	11.91	6.45	4.24	25.40	1.5	—
RX - 63	441.73	27.00	14.78	8.46	50.80	2.3	—
RX - 65	480.62	11.91	6.45	4.24	25.40	1.5	—
RX - 66	483.39	16.66	8.51	5.28	31.75	1.5	—
RX - 69	544.12	11.91	6.45	4.24	25.40	1.5	—
RX - 70	550.06	19.84	10.34	6.88	41.28	2.3	—
RX - 73	596.11	13.49	6.68	5.28	31.75	1.5	—
RX - 74	600.86	19.84	10.34	6.88	41.28	2.3	—
RX - 82	67.87	11.91	6.45	4.24	25.40	1.5	1.5
RX - 84	74.22	11.91	6.45	4.24	25.40	1.5	1.5
RX - 85	90.09	13.49	6.68	4.24	25.40	1.5	1.5
RX - 86	103.58	15.09	8.51	4.78	28.58	1.5	2.4
RX - 87	113.11	15.09	8.51	4.78	28.58	1.5	2.4
RX - 88	139.29	17.48	10.34	5.28	31.75	1.5	3.0
RX - 89	129.77	18.26	10.34	5.28	31.75	1.5	3.0
RX - 90	174.63	19.84	12.17	7.42	44.45	2.3	3.0
RX - 91	286.94	30.18	19.81	7.54	45.24	2.3	3.0
RX - 99	245.67	11.91	6.45	4.24	25.40	1.5	—
RX-201	51.46	5.74	3.20	1.45[Note 1]	11.30	0.5[Note 2]	—
RX-205	62.31	5.56	3.05	1.83[Note 1]	11.10	0.5[Note 2]	—
RX-210	97.64	9.53	5.41	3.18[Note 1]	19.05	0.8[Note 2]	—
RX-215	140.89	11.91	5.33	4.24[Note 1]	25.40	1.5[Note 2]	—

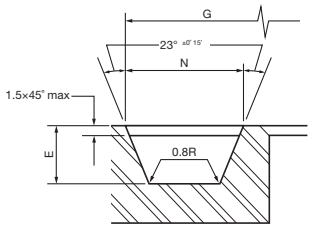
Note 1: Dimensional tolerance +0, -0.38
Note 2: Dimensional tolerance +0.5, -0
*From RX-82 to RX-91, there is a pressure relief hole in the ring.
*The finish of the gasket sealing face must be at least 63RMS

BX rings

Applicable standard
API Spec 6A "Specification for Wellhead and Christmas Tree Equipment"

Applicable flange
API Spec 6A Wellhead Equipment 6BX Flanges





Dimensional tolerance	
OD	+0 -0.15
H,A	+0.2 -0
ODT	±0.05
C	+0.15 -0
E	+0.5 -0
G,N	+0.1 -0

Dimension Table 75

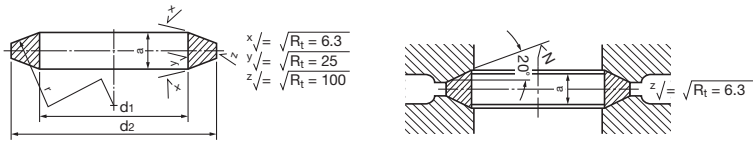
(Unit: mm)

Ring No.	Gasket dimensions							Groove dimensions		
	O.D OD	Height H	Width A	O.D. of flat part ODT	Width of flat part C	Hole diameter D	R	Depth E	O.D G	Width N
BX-150	72.19	9.30	9.30	70.87	7.98	1.6	8 - 12% of gasket height H	5.56	73.48	11.43
BX-151	76.40	9.63	9.63	75.03	8.26	1.6		5.56	77.79	11.84
BX-152	84.68	10.24	10.24	83.24	8.79	1.6		5.95	86.23	12.65
BX-153	100.94	11.38	11.38	99.31	9.78	1.6		6.75	102.77	14.07
BX-154	116.84	12.40	12.40	115.09	10.64	1.6		7.54	119.00	15.39
BX-155	147.96	14.22	14.22	145.95	12.22	1.6		8.33	150.62	17.73
BX-156	237.92	18.62	18.62	235.28	15.98	3.2		11.11	241.83	23.39
BX-157	294.46	20.98	20.98	291.49	18.01	3.2		12.70	299.06	26.39
BX-158	352.04	23.14	23.14	348.77	19.86	3.2		14.29	357.23	29.18
BX-159	426.72	25.70	25.70	423.09	22.07	3.2		15.88	432.64	32.49
BX-160	402.59	23.83	13.74	399.21	10.36	3.2		14.29	408.00	19.96
BX-161	491.41	28.07	16.21	487.45	12.24	3.2		17.07	497.94	23.62
BX-162	475.49	14.22	14.22	473.48	12.22	1.6		8.33	478.33	17.91
BX-163	556.16	30.10	17.37	551.89	13.11	3.2		18.26	563.50	25.55
BX-164	570.56	30.10	24.59	566.29	20.32	3.2		18.26	577.90	32.77
BX-165	624.71	32.03	18.49	620.19	13.97	3.2		19.05	632.56	27.20
BX-166	640.03	32.03	26.14	635.51	21.62	3.2		19.05	647.88	34.87
BX-167	759.36	35.87	13.11	754.28	8.03	1.6		21.43	768.33	22.91
BX-168	765.25	35.87	16.05	760.17	10.97	1.6		21.43	774.22	25.86
BX-169	173.51	15.85	12.93	171.27	10.69	1.6		9.53	176.66	16.92

*There is one pressure relief hole on the centerline of the gasket.
*The finish of the gasket sealing face must be at least 32RMS.

Lens ring type

Applicable standard
DIN 2696-1972



Dimension Table 76

(Unit: mm)

Nominal flange diameter	d_1 Note 1		d_2	a Max	r
	Miin	Max			
ND64 to 400					
10	10	14	21	7	25
15	14	18	28	8.5	32
25	20	29	43	11	50
40	34	43	62	14	70
50	46	55	78	16	88
65	62	70	102	20	112
80	72	82	116	22	129
100	94	108	143	26	170
125	116	135	180	29	218
150	139	158	210	33	250
ND64 to 100					
(175)	176	183	243	31	296
200	198	206	276	35	329
250	246	257	332	37	406
300	295	305	385	40	473
350	330	348	425	41	538
400	385	395	475	42	610
ND160 to 400					
(175)	162	177	243	37	296
200	183	200	276	40	329
250	230	246	332	46	406
300	278	285	385	50	473

Note 1: Unless otherwise specified, the minimum dimensions are used.
* The flange nominal diameter in ( ) should not be used as much as possible.

Rubber O Ring

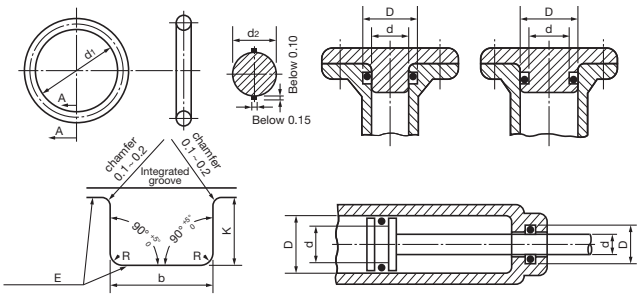
Applicable gaskets

- TOMBO™ No.2670 Series
- TOMBO™ No.2675 Series
- TOMBO™ No.9013 Series

JIS movement and fixed (cylindrical surface) O ring dimension

Applicable standard

· Groove dimensions: JIS B 2401-2 (O-ring-Part 2: Housing dimensions and sizes)
· O-ring dimensions: JIS B 2401-1 (O-ring-Part 1: O-ring)



Dimension Table 77

(Unit: mm)

O ring number	O ring dimension		Groove dimensions							Thickness of back-up ring		
					$b^{+0.25}_{0}$			R (Maximum)	$E^{Note\ 1}$ (Maximum)	Tetrafluoride ethylene resin		
	Inner diameter d_1	Thickness d_2	d	D	No back-up ring	1 back-up ring	2 back-up ring			Spiral	Bias cut	No cut
P 3	$2.8^{\pm0.14}$	$1.9^{\pm0.08}$	$3^{\ 0}_{-0.05}$	$6^{+0.05}_{\ 0}$	2.5	3.9	5.4	0.4	0.05	$0.7^{\pm0.05}$	$1.25^{\pm0.1}$	$1.25^{\pm0.1}$
P 4	$3.8^{\pm0.14}$		4 〃	7 〃								
P 5	$4.8^{\pm0.15}$		5 〃	8 〃								
P 6	$5.8^{\pm0.15}$		6 〃	9 〃								
P 7	$6.8^{\pm0.16}$		7 〃	10 〃								
P 8	$7.8^{\pm0.16}$		8 〃	11 〃								
P 9	$8.8^{\pm0.17}$		9 〃	12 〃								
P10	$9.8^{\pm0.17}$		10 〃	13 〃								
P10A	$9.8^{\pm0.17}$	$2.4^{\pm0.09}$	$10^{\ 0}_{-0.06}$	$14^{\ 0}_{-0.06}$	3.2	4.4	6.0	0.4	0.05	$0.7^{\pm0.05}$	$1.25^{\pm0.1}$	$1.25^{\pm0.1}$
P11	$10.8^{\pm0.18}$		11 〃	15 〃								
P11.2	$11.0^{\pm0.18}$		11.2 〃	15.2 〃								
P12	$11.8^{\pm0.19}$		12 〃	16 〃								
P12.5	$12.3^{\pm0.19}$		12.5 〃	16.5 〃								
P14	$13.8^{\pm0.19}$		14 〃	18 〃								
P15	$14.8^{\pm0.20}$		15 〃	19 〃								
P16	$15.8^{\pm0.20}$		16 〃	20 〃								
P18	$17.8^{\pm0.21}$		18 〃	22 〃								
P20	$19.8^{\pm0.22}$		20 〃	24 〃								
P21	$20.8^{\pm0.23}$		21 〃	25 〃								
P22	$21.8^{\pm0.24}$		22 〃	26 〃								

Note 1: Dimension E represents the difference between the maximum and minimum values of Dimension K, which is twice the coaxiality.

(Unit: mm)

O ring number	O ring dimension		Groove dimensions						Thickness of back-up ring		
	Inner diameter d_1	Thickness d_2	d	D	$b^{+0.25}_{0}$			R (Maximum)	E Note 1 (Maximum)	Tetrafluoride ethylene resin		
					No back-up ring	1 back-up ring	2 back-up ring			Spiral	Bias cut	No cut
P22A	$21.7^{\pm0.24}$	$3.5^{\pm0.10}$	$22^{\ 0}_{-0.08}$	$28^{+0.08}_{\ 0}$	4.7	6.0	7.8	0.8	0.08	$0.7^{\pm0.05}$	$1.25^{\pm0.1}$	$1.25^{\pm0.1}$
P22.4	$22.1^{\pm0.24}$		22.4 〃	28.4 〃								
P24	$23.7^{\pm0.24}$		24 〃	30 〃								
P25	$24.7^{\pm0.25}$		25 〃	31 〃								
P25.5	$25.2^{\pm0.25}$		25.5 〃	31.5 〃								
P26	$25.7^{\pm0.26}$		26 〃	32 〃								
P28	$27.7^{\pm0.28}$		28 〃	34 〃								
P29	$28.7^{\pm0.29}$		29 〃	35 〃								
P29.5	$29.2^{\pm0.29}$		29.5 〃	35.5 〃								
P30	$29.7^{\pm0.29}$		30 〃	36 〃								
P31	$30.7^{\pm0.30}$		31 〃	37 〃								
P31.5	$31.2^{\pm0.31}$		31.5 〃	37.5 〃								
P32	$31.7^{\pm0.31}$		32 〃	38 〃								
P34	$33.7^{\pm0.33}$		34 〃	40 〃								
P35	$34.7^{\pm0.34}$		35 〃	41 〃								
P35.5	$35.2^{\pm0.34}$		35.5 〃	41.5 〃								
P36	$35.7^{\pm0.34}$		36 〃	42 〃								
P38	$37.7^{\pm0.37}$		38 〃	44 〃								
P39	$38.7^{\pm0.37}$		39 〃	45 〃								
P40	$39.7^{\pm0.37}$		40 〃	46 〃								
P41	$40.7^{\pm0.38}$		41 〃	47 〃								
P42	$41.7^{\pm0.39}$		42 〃	48 〃								
P44	$43.7^{\pm0.41}$		44 〃	50 〃								
P45	$44.7^{\pm0.41}$		45 〃	51 〃								
P46	$45.7^{\pm0.42}$		46 〃	52 〃								
P48	$47.7^{\pm0.44}$		48 〃	54 〃								
P49	$48.7^{\pm0.45}$		49 〃	55 〃								
P50	$49.7^{\pm0.45}$		50 〃	56 〃								
P48A	$47.6^{\pm0.44}$	$5.7^{\pm0.13}$	$48^{\ 0}_{-0.10}$	$58^{+0.10}_{\ 0}$	7.5	9.0	11.5	0.8	0.10	$0.9^{\pm0.06}$	$1.9^{\pm0.13}$	$1.9^{\pm0.13}$
P50A	$49.6^{\pm0.45}$		50 〃	60 〃								
P52	$51.6^{\pm0.47}$		52 〃	62 〃								
P53	$52.6^{\pm0.48}$		53 〃	63 〃								
P55	$54.6^{\pm0.49}$		55 〃	65 〃								
P56	$55.6^{\pm0.50}$		56 〃	66 〃								

(Unit: mm)

O ring number	O ring dimension		Groove dimensions							Thickness of back-up ring		
	Inner diameter d_1	Thickness d_2	d	D	$b^{+0.25}_{0}$			R (Maximum)	E[Note 1] (Maximum)	Tetrafluoride ethylene resin		
					No back-up ring	1 back-up ring	2 back-up ring			Spiral	Bias cut	No cut
P 58	$57.6^{\pm0.52}$	$5.7^{\pm0.13}$	$58^{0}_{-0.10}$	$68^{+0.10}_{0}$	7.5	9.0	11.5	0.8	0.10	$0.9^{\pm0.06}$	$1.9^{\pm0.13}$	$1.9^{\pm0.13}$
P 60	$59.6^{\pm0.53}$		60 〃	70 〃								
P 62	$61.6^{\pm0.55}$		62 〃	72 〃								
P 63	$62.6^{\pm0.56}$		63 〃	73 〃								
P 65	$64.6^{\pm0.57}$		65 〃	75 〃								
P 67	$66.6^{\pm0.59}$		67 〃	77 〃								
P 70	$69.6^{\pm0.61}$		70 〃	80 〃								
P 71	$70.6^{\pm0.62}$		71 〃	81 〃								
P 75	$74.6^{\pm0.65}$		75 〃	85 〃								
P 80	$79.6^{\pm0.69}$		80 〃	90 〃								
P 85	$84.6^{\pm0.73}$		85 〃	95 〃								
P 90	$89.6^{\pm0.77}$		90 〃	100 〃								
P 95	$94.6^{\pm0.81}$		95 〃	105 〃								
P100	$99.6^{\pm0.84}$		100 〃	110 〃								
P102	$101.6^{\pm0.85}$		102 〃	112 〃								
P105	$104.6^{\pm0.87}$		105 〃	115 〃								
P110	$109.6^{\pm0.91}$		110 〃	120 〃								
P112	$111.6^{\pm0.92}$		112 〃	122 〃								
P115	$114.6^{\pm0.94}$		115 〃	125 〃								
P120	$119.6^{\pm0.98}$		120 〃	130 〃								
P125	$124.6^{\pm1.01}$		125 〃	135 〃								
P130	$129.6^{\pm1.05}$		130 〃	140 〃								
P132	$131.6^{\pm1.06}$		132 〃	142 〃								
P135	$134.6^{\pm1.09}$		135 〃	145 〃								
P140	$139.6^{\pm1.12}$		140 〃	150 〃								
P145	$144.6^{\pm1.16}$		145 〃	155 〃								
P150	$149.6^{\pm1.19}$		150 〃	160 〃								
P150A	$149.5^{\pm1.19}$	$8.4^{\pm0.15}$	$150^{0}_{-0.10}$	$165^{+0.10}_{0}$	11.0	13.0	17.0	1.2	0.12	$1.4^{\pm0.08}$	$2.75^{\pm0.15}$	$2.75^{\pm0.15}$
P155	$154.5^{\pm1.23}$		155 〃	170 〃								
P160	$159.5^{\pm1.26}$		160 〃	175 〃								
P165	$164.5^{\pm1.30}$		165 〃	180 〃								
P170	$169.5^{\pm1.33}$		170 〃	185 〃								
P175	$174.5^{\pm1.37}$		175 〃	190 〃								
P180	$179.5^{\pm1.40}$		180 〃	195 〃								

Note 1: Dimension E represents the difference between the maximum and minimum values of Dimension K, which is twice the coaxiality.

(Unit: mm)

O ring number	O ring dimension		Groove dimensions							Thickness of back-up ring		
	Inner diameter d_1	Thickness d_2	d	D	$b^{+0.25}_{0}$			R (Maximum)	E[Note 1] (Maximum)	Tetrafluoride ethylene resin		
					No back-up ring	1 back-up ring	2 back-up ring			Spiral	Bias cut	No cut
P185	$184.5^{\pm1.44}$	$8.4^{\pm0.15}$	$185^{0}_{-0.10}$	$200^{+0.10}_{0}$	11.0	13.0	17.0	1.2	0.12	$1.4^{\pm0.08}$	$2.75^{\pm0.15}$	$2.75^{\pm0.15}$
P190	$189.5^{\pm1.48}$		190 〃	205 〃								
P195	$194.5^{\pm1.51}$		195 〃	210 〃								
P200	$199.5^{\pm1.55}$		200 〃	215 〃								
P205	$204.5^{\pm1.58}$		205 〃	220 〃								
P209	$208.5^{\pm1.61}$		209 〃	224 〃								
P210	$209.5^{\pm1.62}$		210 〃	225 〃								
P215	$214.5^{\pm1.65}$		215 〃	230 〃								
P220	$219.5^{\pm1.68}$		220 〃	235 〃								
P225	$224.5^{\pm1.71}$		225 〃	240 〃								
P230	$229.5^{\pm1.75}$		230 〃	245 〃								
P235	$234.5^{\pm1.78}$		235 〃	250 〃								
P240	$239.5^{\pm1.81}$		240 〃	255 〃								
P245	$244.5^{\pm1.84}$		245 〃	260 〃								
P250	$249.5^{\pm1.88}$		250 〃	265 〃								
P255	$254.5^{\pm1.91}$		255 〃	270 〃								
P260	$259.5^{\pm1.94}$		260 〃	275 〃								
P265	$264.5^{\pm1.97}$		265 〃	280 〃								
P270	$269.5^{\pm2.01}$		270 〃	285 〃								
P275	$274.5^{\pm2.04}$		275 〃	290 〃								
P280	$279.5^{\pm2.07}$		280 〃	295 〃								
P285	$284.5^{\pm2.10}$		285 〃	300 〃								
P290	$289.5^{\pm2.14}$		290 〃	305 〃								
P295	$294.5^{\pm2.17}$		295 〃	310 〃								
P300	$299.5^{\pm2.20}$		300 〃	315 〃								
P315	$314.5^{\pm2.30}$		315 〃	330 〃								
P320	$319.5^{\pm2.33}$		320 〃	335 〃								
P335	$334.5^{\pm2.42}$		335 〃	350 〃								
P340	$339.5^{\pm2.45}$		340 〃	355 〃								
P355	$354.5^{\pm2.54}$		355 〃	370 〃								
P360	$359.5^{\pm2.57}$		360 〃	375 〃								
P375	$374.5^{\pm2.67}$		375 〃	390 〃								
P385	$384.5^{\pm2.73}$		385 〃	400 〃								
P400	$399.5^{\pm2.82}$		400 〃	415 〃								

(Unit: mm)

O ring number	O ring dimension		Groove dimensions							Thickness of back-up ring		
	Inner diameter d_1	Thickness d_2	d	D	$b^{+0.25}_{0}$			R (Maximum)	E[Note 1] (Maximum)	Tetrafluoride ethylene resin		
					No back-up ring	1 back-up ring	2 back-up ring			Spiral	Bias cut	No cut
G 25	$24.4^{\pm0.25}$	$3.1^{\pm0.10}$	$25^{0}_{-0.10}$	$30^{+0.10}_{0}$	4.1	5.6	7.3	0.7	0.08	$0.7^{\pm0.08}$	$1.25^{\pm0.1}$	$1.25^{\pm0.1}$
G 30	$29.4^{\pm0.29}$		30 〃	35 〃								
G 35	$34.4^{\pm0.33}$		35 〃	40 〃								
G 40	$39.4^{\pm0.37}$		40 〃	45 〃								
G 45	$44.4^{\pm0.41}$		45 〃	50 〃								
G 50	$49.4^{\pm0.45}$		50 〃	55 〃								
G 55	$54.4^{\pm0.49}$		55 〃	60 〃								
G 60	$59.4^{\pm0.53}$		60 〃	65 〃								
G 65	$64.4^{\pm0.57}$		65 〃	70 〃								
G 70	$69.4^{\pm0.61}$		70 〃	75 〃								
G 75	$74.4^{\pm0.65}$		75 〃	80 〃								
G 80	$79.4^{\pm0.69}$		80 〃	85 〃								
G 85	$84.4^{\pm0.73}$		85 〃	90 〃								
G 90	$89.4^{\pm0.77}$		90 〃	95 〃								
G 95	$94.4^{\pm0.81}$		95 〃	100 〃								
G100	$99.4^{\pm0.85}$		100 〃	105 〃								
G105	$104.4^{\pm0.87}$		105 〃	110 〃								
G110	$109.4^{\pm0.91}$		110 〃	115 〃								
G115	$114.4^{\pm0.94}$		115 〃	120 〃								
G120	$119.4^{\pm0.98}$		120 〃	125 〃								
G125	$124.4^{\pm1.01}$		125 〃	130 〃								
G130	$129.4^{\pm1.05}$		130 〃	135 〃								
G135	$134.4^{\pm1.08}$		135 〃	140 〃								
G140	$139.4^{\pm1.12}$		140 〃	145 〃								
G145	$144.4^{\pm1.16}$		145 〃	150 〃								
G150	$149.3^{\pm1.19}$	$5.7^{\pm0.13}$	$150^{0}_{-0.10}$	$160^{+0.10}_{0}$	7.5	9.0	11.5	0.8	0.10	$0.9^{\pm0.06}$	$1.9^{\pm0.13}$	$1.9^{\pm0.13}$
G155	$154.3^{\pm1.23}$		155 〃	165 〃								
G160	$159.3^{\pm1.26}$		160 〃	170 〃								
G165	$164.3^{\pm1.30}$		165 〃	175 〃								
G170	$169.3^{\pm1.33}$		170 〃	180 〃								
G175	$174.3^{\pm1.37}$		175 〃	185 〃								
G180	$179.3^{\pm1.40}$		180 〃	190 〃								
G185	$184.3^{\pm1.44}$		185 〃	195 〃								
G190	$189.3^{\pm1.47}$		190 〃	200 〃								

(Unit: mm)

O ring number	O ring dimension		Groove dimensions						Thickness of back-up ring		
	Inner diameter d_1	Thickness d_2	d	D	$b^{+0.25}_{0}$			R (Maximum)	$E^{Note\ 1}$ (Maximum)	Tetrafluoride ethylene resin		
					No back-up ring	1 back-up ring	2 back-up ring			Spiral	Bias cut	No cut
G195	$194.3^{\pm1.51}$	$5.7^{\pm0.13}$	$195^{0}_{-0.10}$	$205^{+0.10}_{0}$	7.5	9.0	11.5	0.8	0.10	$0.9^{\pm0.06}$	$1.9^{\pm0.13}$	$1.9^{\pm0.13}$
G200	$199.3^{\pm1.55}$		200 〃	210 〃								
G210	$209.3^{\pm1.61}$		210 〃	220 〃								
G220	$219.3^{\pm1.68}$		220 〃	230 〃								
G230	$229.3^{\pm1.73}$		230 〃	240 〃								
G240	$239.3^{\pm1.81}$		240 〃	250 〃								
G250	$249.3^{\pm1.88}$		250 〃	260 〃								
G260	$259.3^{\pm1.94}$		260 〃	270 〃								
G270	$269.3^{\pm2.01}$		270 〃	280 〃								
G280	$279.3^{\pm2.07}$		280 〃	290 〃								
G290	$289.3^{\pm2.14}$		290 〃	300 〃								
G300	$299.3^{\pm2.20}$		300 〃	310 〃								

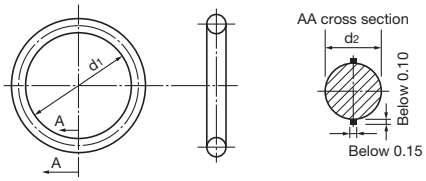
Note 1: Dimension E represents the difference between the maximum and minimum values of Dimension K, which is twice the coaxiality.
* JIS B 2401-1 P3 to P400 are used for dynamic and static, but G25 to G300 are used only for static and not for dynamic. However, even with P3 to P400, materials with low mechanical strength such as Class 4 C are not recommended for dynamic.
*The tolerance of the inner diameter (d1) is 1-3 types of JIS B2401-1. For type 4C, d1 tolerance is 1.5 times the above value and for type 4D, d1 tolerance is 1.2 times the above value.

JIS Static use (flat surface)

Applicable standard

· Groove dimensions: JIS B 2401-2 (O-ring-Part 2: Housing dimensions and sizes)
· O-ring dimensions: JIS B 2401-1 (O-ring-Part 1: O-ring)

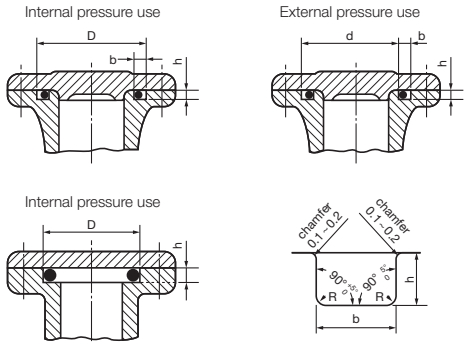
For static use, the idea of design is as follows. If the internal pressure is applied, O-ring expanded by pressure and in close contact with the outer wall of the groove. If the external pressure is applied, O ring shrank in external pressure and in close contact with the inner wall of the groove.



Dimension Table 78

(Unit: mm)

O ring number	O ring dimension		Groove section dimension				
	Inner diameter d_1	Thickness d_2	d (external pressure)	D (Internal pressure)	$b^{+0.25}_{0}$	$h^{\pm0.05}$	R (maximum)
P 3	$2.8^{\pm0.14}$	$1.9^{\pm0.08}$	3	6.2	2.5	1.4	0.4
P 4	$3.8^{\pm0.14}$		4	7.2			
P 5	$4.8^{\pm0.15}$		5	8.2			
P 6	$5.8^{\pm0.15}$		6	9.2			
P 7	$6.8^{\pm0.16}$		7	10.2			
P 8	$7.8^{\pm0.16}$		8	11.2			
P 9	$8.8^{\pm0.17}$		9	12.2			
P10	$9.8^{\pm0.17}$		10	13.2			
P10A	$9.8^{\pm0.17}$	$2.4^{\pm0.09}$	10	14	3.2	1.8	0.4
P11	$10.8^{\pm0.18}$		11	15			
P11.2	$11.0^{\pm0.18}$		11.2	15.2			
P12	$11.8^{\pm0.19}$		12	16			
P12.5	$12.3^{\pm0.19}$		12.5	16.5			
P14	$13.8^{\pm0.19}$		14	18			
P15	$14.8^{\pm0.20}$		15	19			
P16	$15.8^{\pm0.20}$		16	20			
P18	$17.8^{\pm0.21}$		18	22			
P20	$19.8^{\pm0.22}$		20	24			
P21	$20.8^{\pm0.23}$		21	25			
P22	$21.8^{\pm0.24}$		22	26			
P22A	$21.7^{\pm0.24}$	$3.5^{\pm0.10}$	22	28	4.7	2.7	0.8
P22.4	$22.1^{\pm0.24}$		22.4	28.4			
P24	$23.7^{\pm0.24}$		24	30			



(Unit: mm)

O ring number	O ring dimension		Groove section dimension				
	Inner diameter d_1	Thickness d_2	d (external pressure)	D (Internal pressure)	$b^{+0.25}_{0}$	$h^{\pm0.05}$	R (maximum)
P25	$24.7^{\pm0.25}$	$3.5^{\pm0.10}$	25	31	4.7	2.7	0.8
P25.5	$25.2^{\pm0.25}$		25.5	31.5			
P26	$25.7^{\pm0.26}$		26	32			
P28	$27.7^{\pm0.28}$		28	34			
P29	$28.7^{\pm0.29}$		29	35			
P29.5	$29.2^{\pm0.29}$		29.5	35.5			
P30	$29.7^{\pm0.29}$		30	36			
P31	$30.7^{\pm0.30}$		31	37			
P31.5	$31.2^{\pm0.31}$		31.5	37.5			
P32	$31.7^{\pm0.31}$		32	38			
P34	$33.7^{\pm0.33}$		34	40			
P35	$34.7^{\pm0.34}$		35	41			
P35.5	$35.2^{\pm0.34}$		35.5	41.5			
P36	$35.7^{\pm0.34}$		36	42			
P38	$37.7^{\pm0.37}$		38	44			
P39	$38.7^{\pm0.37}$		39	45			
P40	$39.7^{\pm0.37}$		40	46			
P41	$40.7^{\pm0.38}$		41	47			
P42	$41.7^{\pm0.39}$		42	48			
P44	$43.7^{\pm0.41}$		44	50			
P45	$44.7^{\pm0.41}$		45	51			
P46	$45.7^{\pm0.42}$		46	52			
P48	$47.7^{\pm0.44}$		48	54			
P49	$48.7^{\pm0.45}$		49	55			
P50	$49.7^{\pm0.45}$		50	56			

(Unit: mm)

O ring number	O ring dimension		Groove section dimension				
	Inner diameter d_1	Thickness d_2	d (external pressure)	D (Internal pressure)	$b^{+0.25}_{0}$	$h^{\pm0.05}$	R (maximum)
P 48A	$47.6^{\pm0.44}$	$5.7^{\pm0.13}$	48	58	7.5	4.6	0.8
P 50A	$49.6^{\pm0.45}$		50	60			
P 52	$51.6^{\pm0.47}$		52	62			
P 53	$52.6^{\pm0.48}$		53	63			
P 55	$54.6^{\pm0.49}$		55	65			
P 56	$55.6^{\pm0.50}$		56	66			
P 58	$57.6^{\pm0.52}$		58	68			
P 60	$59.6^{\pm0.53}$		60	70			
P 62	$61.6^{\pm0.55}$		62	72			
P 63	$62.6^{\pm0.56}$		63	73			
P 65	$64.6^{\pm0.57}$		65	75			
P 67	$66.6^{\pm0.59}$		67	77			
P 70	$69.6^{\pm0.61}$		70	80			
P 71	$70.6^{\pm0.62}$		71	81			
P 75	$74.6^{\pm0.65}$		75	85			
P 80	$79.6^{\pm0.69}$		80	90			
P 85	$84.6^{\pm0.73}$		85	95			
P 90	$89.6^{\pm0.77}$		90	100			
P 95	$94.6^{\pm0.81}$		95	105			
P100	$99.6^{\pm0.84}$		100	110			
P102	$101.6^{\pm0.85}$		102	112			
P105	$104.6^{\pm0.87}$		105	115			
P110	$109.6^{\pm0.91}$		110	120			
P112	$111.6^{\pm0.92}$		112	122			
P115	$114.6^{\pm0.94}$		115	125			
P120	$119.6^{\pm0.98}$		120	130			
P125	$124.6^{\pm1.01}$		125	135			
P130	$129.6^{\pm1.05}$		130	140			
P132	$131.6^{\pm1.06}$		132	142			
P135	$134.6^{\pm1.09}$		135	145			
P140	$139.6^{\pm1.12}$		140	150			
P145	$144.6^{\pm1.16}$		145	155			
P150	$149.6^{\pm1.19}$		150	160			
P150A	$149.5^{\pm1.19}$	$8.4^{\pm0.15}$	150	165	11.0	6.9	1.2
P155	$154.5^{\pm1.23}$		155	170			
P160	$159.5^{\pm1.26}$		160	175			
P165	$164.5^{\pm1.30}$		165	180			

(Unit: mm)

O ring number	O ring dimension		Groove section dimension				
	Inner diameter d_1	Thickness d_2	d (external pressure)	D (Internal pressure)	$b^{+0.25}_{0}$	$h^{\pm0.05}$	R (maximum)
P170	$169.5^{\pm1.33}$	$8.4^{\pm0.15}$	170	185	11.0	6.9	1.2
P175	$174.5^{\pm1.37}$		175	190			
P180	$179.5^{\pm1.40}$		180	195			
P185	$184.5^{\pm1.44}$		185	200			
P190	$189.5^{\pm1.48}$		190	205			
P195	$194.5^{\pm1.51}$		195	210			
P200	$199.5^{\pm1.55}$		200	215			
P205	$204.5^{\pm1.58}$		205	220			
P209	$208.5^{\pm1.61}$		209	224			
P210	$209.5^{\pm1.62}$		210	225			
P215	$214.5^{\pm1.65}$		215	230			
P220	$219.5^{\pm1.68}$		220	235			
P225	$224.5^{\pm1.71}$		225	240			
P230	$229.5^{\pm1.75}$		230	245			
P235	$234.5^{\pm1.78}$		235	250			
P240	$239.5^{\pm1.81}$		240	255			
P245	$244.5^{\pm1.84}$		245	260			
P250	$249.5^{\pm1.88}$		250	265			
P255	$254.5^{\pm1.91}$		255	270			
P260	$259.5^{\pm1.94}$		260	275			
P265	$264.5^{\pm1.97}$		265	280			
P270	$269.5^{\pm2.01}$		270	285			
P275	$274.5^{\pm2.04}$		275	290			
P280	$279.5^{\pm2.07}$		280	295			
P285	$284.5^{\pm2.10}$		285	300			
P290	$289.5^{\pm2.14}$		290	305			
P295	$294.5^{\pm2.17}$		295	310			
P300	$299.5^{\pm2.20}$		300	315			
P315	$314.5^{\pm2.30}$		315	330			
P320	$319.5^{\pm2.33}$		320	335			
P335	$334.5^{\pm2.42}$		335	350			
P340	$339.5^{\pm2.45}$		340	355			
P355	$354.5^{\pm2.54}$		355	370			
P360	$359.5^{\pm2.57}$		360	375			
P375	$374.5^{\pm2.67}$		375	390			
P385	$384.5^{\pm2.73}$		385	400			
P400	$399.5^{\pm2.82}$		400	415			

(Unit: mm)

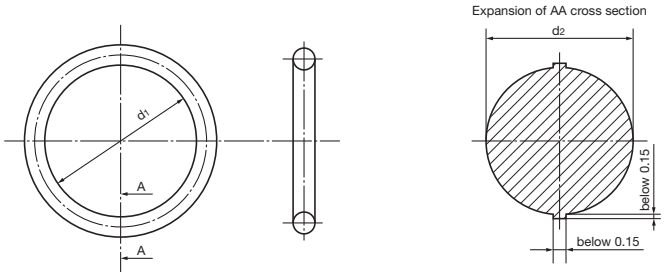
O ring number	O ring dimension		Groove section dimension				
	Inner diameter d_1	Thickness d_2	d (external pressure)	D (Internal pressure)	$b^{+0.25}_{0}$	$h^{\pm0.05}$	R (maximum)
G 25	$24.4^{\pm0.25}$	$3.1^{\pm0.10}$	25	30	4.1	2.4	0.7
G 30	$29.4^{\pm0.29}$		30	35			
G 35	$34.4^{\pm0.33}$		35	40			
G 40	$39.4^{\pm0.37}$		40	45			
G 45	$44.4^{\pm0.41}$		45	50			
G 50	$49.4^{\pm0.45}$		50	55			
G 55	$54.4^{\pm0.49}$		55	60			
G 60	$59.4^{\pm0.53}$		60	65			
G 65	$64.4^{\pm0.57}$		65	70			
G 70	$69.4^{\pm0.61}$		70	75			
G 75	$74.4^{\pm0.68}$		75	80			
G 80	$79.4^{\pm0.69}$		80	85			
G 85	$84.4^{\pm0.73}$		85	90			
G 90	$89.4^{\pm0.77}$		90	95			
G 95	$94.4^{\pm0.81}$		95	100			
G100	$99.4^{\pm0.85}$		100	105			
G105	$104.4^{\pm0.87}$		105	110			
G110	$109.4^{\pm0.91}$		110	115			
G115	$114.4^{\pm0.94}$		115	120			
G120	$119.4^{\pm0.98}$		120	125			
G125	$124.4^{\pm1.01}$		125	130			
G130	$129.4^{\pm1.05}$		130	135			
G135	$134.4^{\pm1.08}$		135	140			
G140	$139.4^{\pm1.12}$		140	145			
G145	$144.4^{\pm1.16}$		145	150			
G150	$149.3^{\pm1.19}$	$5.7^{\pm0.13}$	150	160	7.5	4.6	0.8
G155	$154.3^{\pm1.23}$		155	165			
G160	$159.3^{\pm1.26}$		160	170			
G165	$164.3^{\pm1.30}$		165	175			
G170	$169.3^{\pm1.33}$		170	180			
G175	$174.3^{\pm1.37}$		175	185			
G180	$179.3^{\pm1.40}$		180	190			
G185	$184.3^{\pm1.44}$		185	195			
G190	$189.3^{\pm1.47}$		190	200			
G195	$194.3^{\pm1.51}$		195	205			
G200	$199.3^{\pm1.55}$		200	210			
G210	$209.3^{\pm1.61}$		210	220			

(Unit: mm)

O ring number	O ring dimension		Groove section dimension				
	Inner diameter d_1	Thickness d_2	d (external pressure)	D (Internal pressure)	$b^{+0.25}_{0}$	$h^{\pm0.05}$	R (maximum)
G220	$219.3^{\pm1.68}$	$5.7^{\pm0.13}$	220	230	7.5	4.6	0.8
G230	$229.3^{\pm1.73}$		230	240			
G240	$239.3^{\pm1.81}$		240	250			
G250	$249.3^{\pm1.88}$		250	260			
G260	$259.3^{\pm1.94}$		260	270			
G270	$269.3^{\pm2.01}$		270	280			
G280	$279.3^{\pm2.07}$		280	290			
G290	$289.3^{\pm2.14}$		290	300			
G300	$299.3^{\pm2.20}$		300	310			

* d and D represents a reference dimension and do not have particular tolerance.
* Tolerance of the O-ring inner diameter (d1) in table is for class 1-3 of JIS B2401. For class 4C, d1 tolerance is 1.5 times value listed in table. For class 4D, d1 tolerance is 1.2 times value listed in table.

O-ring dimension for JIS vacuum flange



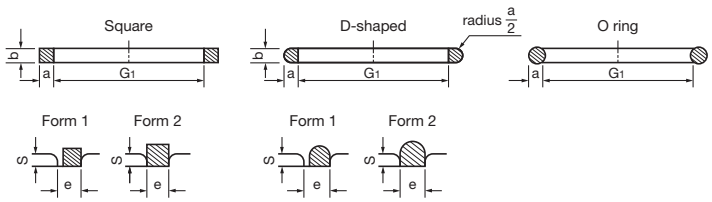
Dimension Table 79

(Unit: mm)

Number	Inner diameter d_1		Thickness d_2	
	Basic dimension	Tolerance	Basic dimension	Tolerance
V 15	14.5	±0.20	4	±0.10
V 24	23.5	±0.24		
V 34	33.5	±0.33		
V 40	39.5	±0.37		
V 55	54.5	±0.49		
V 70	69.0	±0.61		
V 85	84.0	±0.72		
V 100	99.0	±0.83		
V 120	119.0	±0.97		
V 150	148.5	±1.18		
V 175	173.0	±1.36		
V 225	222.5	±1.70	6	±0.15
V 275	272.0	±2.02		
V 325	321.5	±2.34		
V 380	376.0	±2.68		
V 430	425.5	±2.99		
V 480	475.0	±3.30	10	±0.30
V 530	524.5	±3.60		
V 585	579.0	±3.92		
V 640	633.5	±4.24		
V 690	683.0	±4.54		
V 740	732.5	±4.83		
V 790	782.0	±5.12		
V 845	836.5	±5.44		
V 950	940.5	±6.06		
V1055	1044.0	±6.67		

* The tolerance of inner diameter d1 is the tolerance of NBR and EPDM in JIS B 2401-1 (O-ring-Part 1: O-ring). In the case of VMQ, it is 1.5 times the above tolerance, and in the case of FKM, it is 1.2 times the above tolerance.

For JIS vacuum equipment



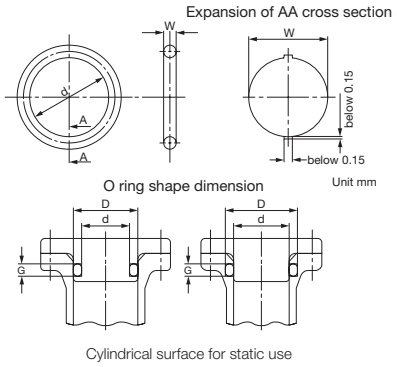
Dimension Table 80

(Unit: mm)

Flange nominal diameter	Gasket										
	Inner diameter G_1		Square				D-shaped				O ring
			Form 1		Form 2		Form 1		Form 2		
	Number	Dimension	a	b	a	b	a	b	a	b	a
10	24	23.5±0.24	4±0.1	4±0.1	5±0.1	5±0.1	4±0.1	4±0.1	5±0.1	5±0.1	4±0.1
20	34	33.5±0.33									
25	40	39.5±0.37									
40	55	54.5±0.49									
50	70	69.0±0.61									
65	85	84.0±0.72									
80	100	99.0±0.83									
100	120	119.0±0.97									
125	150	148.5±1.18									
150	175	173.0±1.36									
200	225	222.5±1.70	6±0.1	6±0.1	8±0.2	8±0.2	6±0.1	6±0.1	8±0.2	8±0.2	6±0.15
250	275	272.0±2.02									
300	325	321.5±2.34									
350	380	376.0±2.68									
400	430	425.5±2.99									
450	480	475.0±3.30	8±0.2	10±0.3	12±0.3	12±0.3	8±0.2	10±0.3	12±0.3	12±0.3	10±0.3
500	530	524.5±3.60									
550	585	579.0±3.92									
600	640	633.5±4.24									
650	690	683.0±4.54									
700	740	732.5±4.83									
750	790	782.0±5.12									
800	845	836.5±5.44									
900	950	940.5±6.06									
1000	1055	1044.0±6.67									

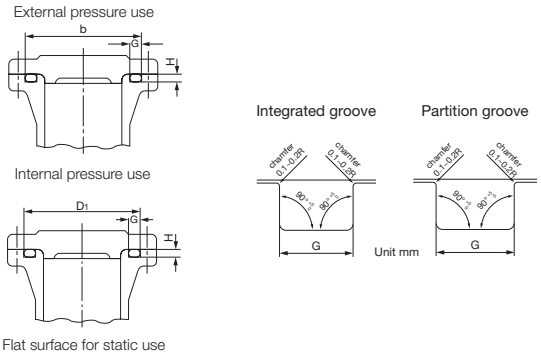
* The tolerance of inner diameter d1 is the tolerance of NBR and EPDM in JIS B 2401-1 (O-ring-Part 1: O-ring). In the case of VMQ, it is 1.5 times the above tolerance, and in the case of FKM, it is 1.2 times the above tolerance.

S series



Dimension Table 81 (Unit: mm)

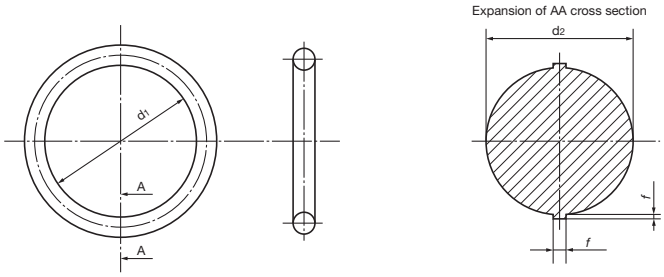
Number	O ring dimension			Cylindrical surface for static. Flat surface for static. Groove dimension				
	Thickness W	Inner diameter d		$d^{0}_{-0.05}$	D_1	$D^{+0.05}_{0}$	$G^{+0.25}_{0}$	$H^{0}_{-0.1}$
S 3	1.5±0.1	2.5	±0.15	3	5.3	5	2.5	1.0
S 4		3.5		4	6.3	6		
S 5		4.5		5	7.3	7		
S 6		5.5		6	8.3	8		
S 7		6.5		7	9.3	9		
S 8		7.5		8	10.3	10		
S 9		8.5		9	11.3	11		
S10		9.5		10	12.3	12		
S11.2		10.7		11.2	13.5	13.2		
S12		11.5		12	14.3	14		
S12.5		12.0		12.5	14.8	14.5		
S14		13.5		14	16.3	16		
S15		14.5		15	17.3	17		
S16		15.5		16	18.3	18		
S18		17.5		18	20.3	20		
S20		19.5		20	22.3	22		
S22		21.5		22	24.3	24		
S22.4	2.0±0.1	21.9		22.4	25.9	25.4	2.7	1.5
S24		23.5		24	27.5	27		
S25		24.5		25	28.5	28		
S26		25.5		26	29.5	29		
S28		27.5		28	31.5	31		
S29		28.5		29	32.5	32		
S30		29.5		30	33.5	33		
S31.5		31.0		31.5	35	34.5		
S32		31.5		32	35.5	35		
S34		33.5		34	37.5	37		
S35		34.5		35	38.5	38		
S35.5		35.0		35.5	39	38.5		
S36		35.5		36	39.5	39		
S38		37.5		38	41.5	41		
S39		38.5		39	42.5	42		
S40		39.5		40	43.5	43		



(Unit: mm)

Number	O ring dimension			Cylindrical surface for static. Flat surface for static. Groove dimension				
	Thickness W	Inner diameter d		$d^{0}_{-0.05}$	D_1	$D^{+0.05}_{0}$	$G^{+0.25}_{0}$	$H^{0}_{-0.1}$
S 42	2.0±0.1	41.5	±0.25	42	45.5	45	2.7	1.5
S 44		43.5		44	47.5	47		
S 45		44.5		45	48.5	48		
S 46		45.5		46	49.5	49		
S 48		47.5		48	51	51		
S 50		49.5		50	53	53		
S 53		52.5		53	56	56		
S 55		54.5		55	58	58		
S 56		55.5		56	59	59		
S 60		59.5		60	63	63		
S 63		62.5		63	66	66		
S 65		64.5		65	68	68		
S 67		66.5		67	70	70		
S 70		69.5		70	73	73		
S 71		70.5	±0.4	71	74	74		
S 75		74.5		75	78	78		
S 80		79.5		80	83	83		
S 85		84.5		85	88	88		
S 90		89.5		90	93	93		
S 95		94.5		95	98	98		
S100		99.5		100	103	103		
S105		104.5		105	108	108		
S110		109.5		110	113	113		
S112		111.5		112	115	115		
S115		114.5		115	118	118		
S120		119.5		120	123	123		
S125		124.5		125	128	128		
S130		129.5	±0.6	130	133	133		
S132		131.5		132	135	135		
S135		134.5		135	138	138		
S140		139.5		140	143	143		
S145		144.5		145	148	148		
S150		149.5		150	153	153		

ISO general industrial



Dimension Table 82

(Unit: mm)

Basic dimension of thickness d_2 and tolerance		1.80±0.08	2.65±0.09	3.55±0.10	5.30±0.13	7.00±0.15
Symbol		A	B	C	D	E
f		Below 0.1	Below 0.12	Below 0.14	Below 0.16	Below 0.18
Inner diameter d_1		Number				
Basic dimension	Tolerance					
1.80	±0.13	A0018G	—	—	—	—
2.00	±0.13	A0020G	—	—	—	—
2.24	±0.13	A0022G	—	—	—	—
2.50	±0.13	A0025G	—	—	—	—
2.80	±0.14	A0028G	—	—	—	—
3.15	±0.14	A0031G	—	—	—	—
3.55	±0.14	A0035G	—	—	—	—
3.75	±0.14	A0037G	—	—	—	—
4.00	±0.14	A0040G	—	—	—	—
4.50	±0.14	A0045G	—	—	—	—
4.87	±0.15	A0048G	—	—	—	—
5.00	±0.15	A0050G	—	—	—	—
5.15	±0.15	A0051G	—	—	—	—
5.30	±0.15	A0053G	—	—	—	—
5.60	±0.15	A0056G	—	—	—	—
6.00	±0.15	A0060G	—	—	—	—
6.30	±0.15	A0063G	—	—	—	—
6.70	±0.16	A0067G	—	—	—	—
6.90	±0.16	A0069G	—	—	—	—
7.10	±0.16	A0071G	—	—	—	—
7.50	±0.16	A0075G	—	—	—	—
8.00	±0.16	A0080G	—	—	—	—
8.50	±0.16	A0085G	—	—	—	—
8.75	±0.17	A0087G	—	—	—	—
9.00	±0.17	A0090G	—	—	—	—

(Unit: mm)

Basic dimension of thickness d_2 and tolerance		1.80±0.08	2.65±0.09	3.55±0.10	5.30±0.13	7.00±0.15
Symbol		A	B	C	D	E
f		Below 0.1	Below 0.12	Below 0.14	Below 0.16	Below 0.18
Inner diameter d_1		Number				
Basic dimension	Tolerance					
9.50	±0.17	A0095G	—	—	—	—
10.0	±0.17	A0100G	—	—	—	—
10.6	±0.18	A0106G	—	—	—	—
11.2	±0.18	A0112G	—	—	—	—
11.8	±0.19	A0118G	—	—	—	—
12.5	±0.19	A0125G	—	—	—	—
13.2	±0.19	A0132G	—	—	—	—
14.0	±0.19	A0140G	B0140G	—	—	—
15.0	±0.20	A0150G	B0150G	—	—	—
16.0	±0.20	A0160G	B0160G	—	—	—
17.0	±0.21	A0170G	B0170G	—	—	—
18.0	±0.21	—	B0180G	C0180G	—	—
19.0	±0.22	—	B0190G	C0190G	—	—
20.0	±0.22	—	B0200G	C0200G	—	—
21.2	±0.23	—	B0212G	C0212G	—	—
22.4	±0.24	—	B0224G	C0224G	—	—
23.6	±0.24	—	B0236G	C0236G	—	—
25.0	±0.25	—	B0250G	C0250G	—	—
25.8	±0.26	—	B0258G	C0258G	—	—
26.5	±0.26	—	B0265G	C0265G	—	—
28.0	±0.28	—	B0280G	C0280G	—	—
30.0	±0.29	—	B0300G	C0300G	—	—
31.5	±0.31	—	B0315G	C0315G	—	—
32.5	±0.32	—	B0325G	C0325G	—	—
33.5	±0.32	—	B0335G	C0335G	—	—
34.5	±0.33	—	B0345G	C0345G	—	—
35.5	±0.34	—	B0355G	C0355G	—	—
36.5	±0.35	—	B0365G	C0365G	—	—
37.5	±0.36	—	B0375G	C0375G	—	—
38.7	±0.37	—	B0387G	C0387G	—	—
40.0	±0.38	—	—	C0400G	D0400G	—
41.2	±0.39	—	—	C0412G	D0412G	—
42.5	±0.40	—	—	C0425G	D0425G	—
43.7	±0.41	—	—	C0437G	D0437G	—
45.0	±0.42	—	—	C0450G	D0450G	—

(Unit: mm)

Basic dimension of thickness d_2 and tolerance		1.80±0.08	2.65±0.09	3.55±0.10	5.30±0.13	7.00±0.15
Symbol		A	B	C	D	E
f		Below 0.1	Below 0.12	Below 0.14	Below 0.16	Below 0.18
Inner diameter d_1		Number				
Basic dimension	Tolerance					
46.2	±0.43	—	—	C0462G	D0462G	—
47.5	±0.44	—	—	C0475G	D0475G	—
48.7	±0.45	—	—	C0487G	D0487G	—
50.0	±0.46	—	—	C0500G	D0500G	—
51.5	±0.47	—	—	C0515G	D0515G	—
53.0	±0.48	—	—	C0530G	D0530G	—
54.5	±0.50	—	—	C0545G	D0545G	—
56.0	±0.51	—	—	C0560G	D0560G	—
58.0	±0.52	—	—	C0580G	D0580G	—
60.0	±0.54	—	—	C0600G	D0600G	—
61.5	±0.55	—	—	C0615G	D0615G	—
63.0	±0.56	—	—	C0630G	D0630G	—
65.0	±0.58	—	—	C0650G	D0650G	—
67.0	±0.59	—	—	C0670G	D0670G	—
69.0	±0.61	—	—	C0690G	D0690G	—
71.0	±0.63	—	—	C0710G	D0710G	—
73.0	±0.64	—	—	C0730G	D0730G	—
75.0	±0.66	—	—	C0750G	D0750G	—
77.5	±0.67	—	—	C0775G	D0775G	—
80.0	±0.69	—	—	C0800G	D0800G	—
82.5	±0.71	—	—	C0825G	D0825G	—
85.0	±0.73	—	—	C0850G	D0850G	—
87.5	±0.75	—	—	C0875G	D0875G	—
90.0	±0.77	—	—	C0900G	D0900G	—
92.5	±0.79	—	—	C0925G	D0925G	—
95.0	±0.81	—	—	C0950G	D0950G	—
97.5	±0.83	—	—	C0975G	D0975G	—
100	±0.84	—	—	C1000G	D1000G	—
103	±0.87	—	—	C1030G	D1030G	—
106	±0.89	—	—	C1060G	D1060G	—
109	±0.91	—	—	C1090G	D1090G	E1090G
112	±0.93	—	—	C1120G	D1120G	E1120G
115	±0.95	—	—	C1150G	D1150G	E1150G
118	±0.97	—	—	C1180G	D1180G	E1180G
122	±1.00	—	—	C1220G	D1220G	E1220G

(Unit: mm)

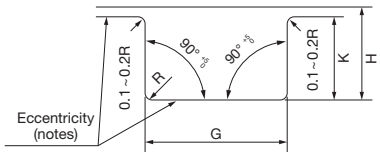
Basic dimension of thickness d_2 and tolerance		1.80±0.08	2.65±0.09	3.55±0.10	5.30±0.13	7.00±0.15
Symbol		A	B	C	D	E
f		Below 0.1	Below 0.12	Below 0.14	Below 0.16	Below 0.18
Inner diameter d_1		Number				
Basic dimension	Tolerance					
125	±1.03	—	—	C1250G	D1250G	E1250G
128	±1.05	—	—	C1280G	D1280G	E1280G
132	±1.08	—	—	C1320G	D1320G	E1320G
136	±1.10	—	—	C1360G	D1360G	E1360G
140	±1.13	—	—	C1400G	D1400G	E1400G
145	±1.17	—	—	C1450G	D1450G	E1450G
150	±1.20	—	—	C1500G	D1500G	E1500G
155	±1.24	—	—	C1550G	D1550G	E1550G
160	±1.27	—	—	C1600G	D1600G	E1600G
165	±1.31	—	—	C1650G	D1650G	E1650G
170	±1.34	—	—	C1700G	D1700G	E1700G
175	±1.38	—	—	C1750G	D1750G	E1750G
180	±1.41	—	—	C1800G	D1800G	E1800G
185	±1.44	—	—	C1850G	D1850G	E1850G
190	±1.48	—	—	C1900G	D1900G	E1900G
195	±1.51	—	—	C1950G	D1950G	E1950G
200	±1.55	—	—	C2000G	D2000G	E2000G
206	±1.59	—	—	—	D2060G	E2060G
212	±1.63	—	—	—	D2120G	E2120G
218	±1.67	—	—	—	D2180G	E2180G
224	±1.71	—	—	—	D2240G	E2240G
230	±1.75	—	—	—	D2300G	E2300G
236	±1.79	—	—	—	D2360G	E2360G
243	±1.83	—	—	—	D2430G	E2430G
250	±1.88	—	—	—	D2500G	E2500G
258	±1.93	—	—	—	D2580G	E2580G
265	±1.98	—	—	—	D2650G	E2650G
272	±2.02	—	—	—	D2720G	E2720G
280	±2.08	—	—	—	D2800G	E2800G
290	±2.14	—	—	—	D2900G	E2900G
300	±2.21	—	—	—	D3000G	E3000G
307	±2.25	—	—	—	D3070G	E3070G
315	±2.30	—	—	—	D3150G	E3150G
325	±2.37	—	—	—	D3250G	E3250G
335	±2.43	—	—	—	D3350G	E3350G

(Unit: mm)

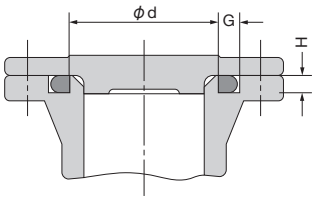
Basic dimension of thickness d_2 and tolerance		1.80±0.08	2.65±0.09	3.55±0.10	5.30±0.13	7.00±0.15
Symbol		A	B	C	D	E
f		Below 0.1	Below 0.12	Below 0.14	Below 0.16	Below 0.18
Inner diameter d_1		Number				
Basic dimension	Tolerance					
345	±2.49	—	—	—	D3450G	E3450G
355	±2.56	—	—	—	D3550G	E3550G
365	±2.62	—	—	—	D3650G	E3650G
375	±2.68	—	—	—	D3750G	E3750G
387	±2.76	—	—	—	D3870G	E3870G
400	±2.84	—	—	—	D4000G	E4000G
412	±2.91	—	—	—	—	E4120G
425	±2.99	—	—	—	—	E4250G
437	±3.07	—	—	—	—	E4370G
450	±3.15	—	—	—	—	E4500G
462	±3.22	—	—	—	—	E4620G
475	±3.30	—	—	—	—	E4750G
487	±3.37	—	—	—	—	E4870G
500	±3.45	—	—	—	—	E5000G
515	±3.54	—	—	—	—	E5150G
530	±3.63	—	—	—	—	E5300G
545	±3.72	—	—	—	—	E5450G
560	±3.81	—	—	—	—	E5600G
580	±3.93	—	—	—	—	E5800G
600	±4.05	—	—	—	—	E6000G
615	±4.13	—	—	—	—	E6150G
630	±4.22	—	—	—	—	E6300G
650	±4.34	—	—	—	—	E6500G
670	±4.46	—	—	—	—	E6700G

* The G at the end of model numbers indicates the industrial application.

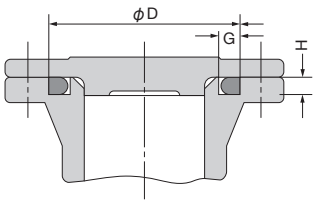
AS568B static use (flat surface)



Integrated groove



External pressure use

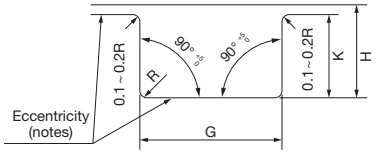


Internal pressure use

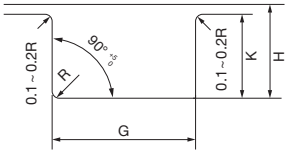
Dimension Table 83 Dimensions when using AS568B O-rings for gaskets (Unit: mm)

O ring thickness (W)	Groove depth (H)	Groove width (G)	Bottom radius (R)
1.78±0.07	1.27±0.05	$2.39^{+0.25}_{0}$	0.4
2.62±0.07	2.06±0.05	$3.58^{+0.25}_{0}$	0.4
3.53±0.10	2.82±0.05	$4.78^{+0.25}_{0}$	0.6
5.33±0.12	4.32±0.05	$7.14^{+0.25}_{0}$	0.7
6.98±0.15	5.74±0.05	$9.52^{+0.25}_{0}$	0.7

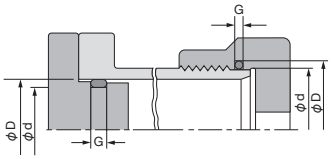
For dynamic and static use (cylindrical surface)



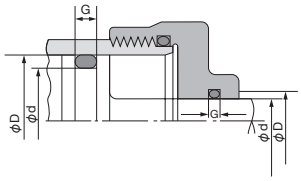
Integrated groove



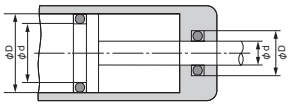
Partition groove



Cylindrical surface for static use



Dynamic use



Dynamic use

O ring groove dimension of AS568B for dynamic use and fine cylindrical surface for static use.
(MIL-G-5514-F) operating pressure 10.3 MPa

(Unit: mm)

O ring thickness (W)	Groove depth (H)	Groove width (G)	Bottom radius (R)
1.78±0.07	$1.425^{+0.03}_{0}$	$2.39^{+0.25}_{0}$	0.4
2.62±0.07	$2.265^{+0.05}_{0}$	$3.58^{+0.25}_{0}$	0.4
3.53±0.10	$3.085^{+0.05}_{0}$	$4.78^{+0.25}_{0}$	0.6
5.33±0.12	$4.725^{+0.05}_{0}$	$7.14^{+0.25}_{0}$	0.7
6.98±0.15	$6.06^{+0.08}_{0}$	$9.52^{+0.25}_{0}$	0.7

(Unit: mm)

AS568B	O ring dimension			
	Inner diameter		Thickness	
	Inner diameter	Tolerance	Thickness	Tolerance
001	0.74	±0.10	1.02	±0.07
002	1.07		1.27	
003	1.42		1.52	
004	1.78	±0.13	1.78	
005	2.56			
006	2.90			
007	3.68			
008	4.47			
009	5.28			
010	6.07			
011	7.64			
012	9.24			
013	10.82			
014	12.42			
015	14.00	±0.18		
016	15.60	±0.23		
017	17.17			
018	18.77			
019	20.34			
020	21.95			
021	23.52			
022	25.12	±0.25		
023	26.70	±0.26		
024	28.30			
025	29.87	±0.28		
026	31.47			
027	33.04			
028	34.65	±0.33		
029	37.82			
030	41.00			
031	44.17	±0.38		
032	47.34	±0.39		
033	50.52	±0.46		
034	53.70			
035	56.87			
036	60.04			
037	63.22			
038	66.40	±0.50		
039	69.60			
040	72.75	±0.55		
041	75.90	±0.60		
042	82.30			
043	88.60			
044	95.00	±0.70		
045	101.30			
046	107.65	±0.75		
047	114.05			

* This dimension shows the case of AS568B, not standard value.

(Unit: mm)

AS568B	O ring dimension			
	Inner diameter		Thickness	
	Inner diameter	Tolerance	Thickness	Tolerance
048	120.35	±0.75	1.78	±0.07
049	126.75	±0.95		
050	133.05			
102	1.24	±0.13	2.62	
103	2.06			
104	2.84			
105	3.64			
106	4.42			
107	5.24			
108	6.02			
109	7.60			
110	9.20			
111	10.77			
112	12.37			
113	13.94	±0.18		
114	15.54	±0.23		
115	17.12			
116	18.72			
117	20.30	±0.26		
118	21.90			
119	23.47	±0.25		
120	25.07			
121	26.64	±0.26		
122	28.24			
123	29.82	±0.31		
124	31.42	±0.30		
125	33.00	±0.31		
126	34.60			
127	36.16			
128	37.76			
129	39.34	±0.39		
130	40.94			
131	42.52	±0.38		
132	44.12			
133	45.70	±0.39		
134	47.30			
135	48.90	±0.44		
136	50.47	±0.43		
137	52.07			
138	53.64	±0.44		
139	55.24			
140	56.82	±0.43		
141	58.40	±0.50		
142	60.00			
143	61.60			
144	63.20			
145	64.80			

* This dimension shows the case of AS568B, not standard value.

(Unit: mm)

AS568B	O ring dimension			
	Inner diameter		Thickness	
	Inner diameter	Tolerance	Thickness	Tolerance
146	66.35	±0.55	2.62	±0.07
147	67.95			
148	69.55			
149	71.15			
150	72.70	±0.60		
151	75.90			
152	82.20			
153	88.60			
154	94.90	±0.70		
155	101.30			
156	107.65	±0.75		
157	113.95			
158	120.35			
159	126.70	±0.90		
160	133.00			
161	139.40			
162	145.70			
163	152.10			
164	158.40	±1.00		
165	164.80			
166	171.10			
167	177.50			
168	183.85	±1.15		
169	190.15			
170	196.55			
171	202.85			
172	209.20	±1.30		
173	215.55	±1.25		
174	221.90	±1.30		
175	228.25	±1.25		
176	234.60	±1.40		
177	241.00			
178	247.30			
201	4.34	±0.13	3.53	±0.10
202	5.94			
203	7.52			
204	9.12			
205	10.70			
206	12.29			
207	13.87	±0.18		
208	15.47	±0.23		
209	17.04			
210	18.64	±0.26		
211	20.22			
212	21.82			
213	23.40			
214	25.00			

* This dimension shows the case of AS568B, not standard value.

(Unit: mm)

AS568B	O ring dimension			
	Inner diameter		Thickness	
	Inner diameter	Tolerance	Thickness	Tolerance
215	26.56	±0.26	3.53	±0.10
216	28.16	±0.31		
217	29.74			
218	31.34			
219	32.92			
220	34.52			
221	36.10			
222	37.69	±0.38		
223	40.87			
224	44.04			
225	47.22	±0.46		
226	50.40			
227	53.57			
228	56.75	±0.55		
229	59.90	±0.50		
230	63.10			
231	66.30			
232	69.45	±0.65		
233	72.60	±0.60		
234	75.80			
235	79.00			
236	82.15	±0.65		
237	85.30	±0.60		
238	88.50			
239	91.70	±0.70		
240	94.85	±0.75		
241	98.00	±0.70		
242	101.20			
243	104.40			
244	107.55	±0.75		
245	110.75			
246	113.90	±0.80		
247	117.05	±0.75		
248	120.25			
249	123.40	±0.90		
250	126.60			
251	129.80			
252	132.95	±0.85		
253	136.10	±0.90		
254	139.30			
255	142.50			
256	145.65	±0.85		
257	148.80	±0.90		
258	152.00			
259	158.35	±1.05		
260	164.70	±1.00		
261	171.05	±1.05		

* This dimension shows the case of AS568B, not standard value.

(Unit: mm)

AS568B	O ring dimension			
	Inner diameter		Thickness	
	Inner diameter	Tolerance	Thickness	Tolerance
262	177.40	±1.00	3.53	±0.10
263	183.75	±1.15		
264	190.10	±1.10		
265	196.45	±1.15		
266	202.80	±1.10		
267	209.15	±1.25		
268	215.50	±1.30		
269	221.85	±1.25		
270	228.20	±1.30		
271	234.50	±1.40		
272	240.90			
273	247.20			
274	253.60			
275	266.30			
276	278.95	±1.65		
277	291.65			
278	304.35			
279	329.75			
280	355.15			
281	380.55			
282	405.30	±1.90		
283	430.65	±2.05		
284	456.05	±2.15		
309	10.46	±0.13	5.33	±0.12
310	12.06			
311	13.64	±0.18		
312	15.24	±0.23		
313	16.82			
314	18.42	±0.26		
315	19.99	±0.25		
316	21.59			
317	23.16	±0.26		
318	24.76			
319	26.34	±0.25		
320	27.94	±0.30		
321	29.52	±0.31		
322	31.12			
323	32.68			
324	34.29	±0.30		
325	37.46	±0.39		
326	40.64	±0.38		
327	43.82	±0.39		
328	46.99	±0.38		
329	50.16	±0.46		
330	53.34			
331	56.52			
332	59.69			

* This dimension shows the case of AS568B, not standard value.

(Unit: mm)

AS568B	O ring dimension			
	Inner diameter		Thickness	
	Inner diameter	Tolerance	Thickness	Tolerance
333	62.90	±0.50	5.33	±0.12
334	66.00			
335	69.20			
336	72.40			
337	75.60	±0.60		
338	78.70			
339	81.90			
340	85.10			
341	88.30			
342	91.45	±0.75		
343	94.60	±0.70		
344	97.80			
345	101.00			
346	104.15	±0.75		
347	107.35			
348	110.50	±0.80		
349	113.65	±0.75		
350	116.85			
351	120.05			
352	123.20	±0.80		
353	126.35	±0.95		
354	129.55			
355	132.75			
356	135.90	±0.90		
357	139.05	±0.95		
358	142.25			
359	145.45			
360	148.60	±0.90		
361	151.75	±0.95		
362	158.10	±1.00		
363	164.45	±1.05		
364	170.80	±1.00		
365	177.15	±1.05		
366	183.55	±1.15		
367	189.85			
368	196.25			
369	202.55			
370	208.90	±1.30		
371	215.25	±1.25		
372	221.60	±1.30		
373	227.95	±1.25		
374	234.30	±1.40		
375	240.70			
376	247.00			
377	253.40			
378	266.05	±1.55		
379	278.75			

* This dimension shows the case of AS568B, not standard value.

(Unit: mm)

AS568B	O ring dimension			
	Inner diameter		Thickness	
	Inner diameter	Tolerance	Thickness	Tolerance
380	291.45	±1.65	5.33	±0.12
381	304.15			
382	329.55			
383	354.95	±1.75		
384	380.35			
385	405.30	±1.90		
386	430.65	±2.05		
387	456.05	±2.15		
388	481.45	±2.25		
389	506.85	±2.45		
390	532.25			
391	557.65	±2.55		
392	582.65	±2.65		
393	608.10	±2.80		
394	633.50	±2.90		
395	658.85	±3.05		
425	113.65	±0.85	6.98	±0.15
426	116.85			
427	120.05			
428	123.20	±0.80		
429	126.35	±0.95		
430	129.55			
431	132.75			
432	135.90	±0.90		
433	139.05	±0.95		
434	142.25			
435	145.45			
436	148.60	±0.90		
437	151.75	±0.95		
438	158.10	±1.00		
439	164.45	±1.05		
440	170.80	±1.00		
441	177.15	±1.05		
442	183.55	±1.15		
443	189.85			
444	196.25			
445	202.55			
446	215.30	±1.40		
447	228.00			
448	240.70			
449	253.40			
450	266.05	±1.55		
451	278.75			
452	291.45			
453	304.15			
454	316.85			
455	329.55			

* This dimension shows the case of AS568B, not standard value.

(Unit: mm)

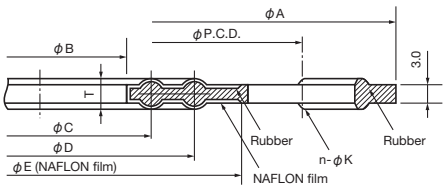
<table>
<tr><th rowspan="3">AS568B</th><th colspan="4">O ring dimension</th></tr>
<tr><th colspan="2">Inner diameter</th><th colspan="2">Thickness</th></tr>
<tr><th>Inner diameter</th><th>Tolerance</th><th>Thickness</th><th>Tolerance</th></tr>
<tr><td>456</td><td>342.25</td><td rowspan="5">±1.75</td><td rowspan="24">6.98</td><td rowspan="24">±0.15</td></tr>
<tr><td>457</td><td>354.95</td></tr>
<tr><td>458</td><td>367.65</td></tr>
<tr><td>459</td><td>380.35</td></tr>
<tr><td>460</td><td>393.05</td></tr>
<tr><td>461</td><td>405.30</td><td rowspan="2">±1.90</td></tr>
<tr><td>462</td><td>418.00</td></tr>
<tr><td>463</td><td>430.65</td><td>±2.05</td></tr>
<tr><td>464</td><td>443.35</td><td rowspan="3">±2.15</td></tr>
<tr><td>465</td><td>456.05</td></tr>
<tr><td>466</td><td>468.75</td></tr>
<tr><td>467</td><td>481.45</td><td rowspan="2">±2.25</td></tr>
<tr><td>468</td><td>494.15</td></tr>
<tr><td>469</td><td>506.85</td><td rowspan="2">±2.45</td></tr>
<tr><td>470</td><td>532.25</td></tr>
<tr><td>471</td><td>557.65</td><td>±2.55</td></tr>
<tr><td>472</td><td>582.65</td><td>±2.65</td></tr>
<tr><td>473</td><td>608.10</td><td>±2.80</td></tr>
<tr><td>474</td><td>633.50</td><td>±2.90</td></tr>
<tr><td>475</td><td>658.85</td><td>±3.05</td></tr>
<tr><td>901</td><td>4.70</td><td rowspan="6">±0.13</td><td>1.42</td><td rowspan="7">±0.07</td></tr>
<tr><td>902</td><td>6.07</td><td rowspan="2">1.62</td></tr>
<tr><td>903</td><td>7.64</td></tr>
<tr><td>904</td><td>8.92</td><td rowspan="2">1.82</td></tr>
<tr><td>905</td><td>10.52</td></tr>
<tr><td>906</td><td>11.88</td><td>1.98</td></tr>
<tr><td>907</td><td>13.46</td><td>±0.18</td><td>2.08</td></tr>
<tr><td>908</td><td>16.36</td><td rowspan="5">±0.23</td><td>2.21</td></tr>
<tr><td>909</td><td>17.93</td><td rowspan="2">2.46</td></tr>
<tr><td>910</td><td>19.18</td></tr>
<tr><td>911</td><td>21.92</td><td rowspan="6">2.94</td><td rowspan="8">0.10</td></tr>
<tr><td>912</td><td>23.47</td></tr>
<tr><td>913</td><td>25.04</td><td rowspan="3">±0.26</td></tr>
<tr><td>914</td><td>26.60</td></tr>
<tr><td>916</td><td>29.74</td></tr>
<tr><td>918</td><td>34.42</td><td>±0.31</td></tr>
<tr><td>920</td><td>37.46</td><td rowspan="2">±0.36</td><td rowspan="3">3.00</td></tr>
<tr><td>924</td><td>43.68</td></tr>
<tr><td>928</td><td>53.08</td><td rowspan="2">±0.46</td></tr>
<tr><td>932</td><td>59.36</td></tr>
</table>

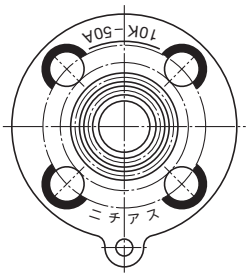
* This dimension shows the case of AS568B, not standard value.

For 10K flange

Applicable standard
This dimension table is based on the (old) JIS B 2210 10K flange and is set by NICHIAS based on the inner diameter of the plastic flange.

Applicable flange
Plastic 10K flange
(Kubota Iron Works, Sekisui Chemical, Asahi Organic Materials Industry PVC flange, etc.)





Dimension Table 84

(Unit: mm)

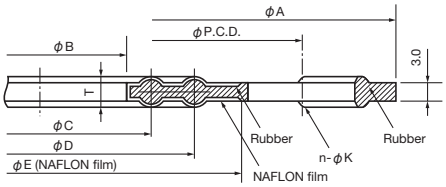
Nominal flange diameter		Gasket		Thickness T	Diameter of sealing part		Bolt		Reference E
A	B	O.D A	I.D B		C	D	P.C.D.	n-ϕK	
15	1/2	93	18	5	26	41	70	4-15	53
20	3/4	98	22	5	32	47	75	4-15	58
25	1	123	30	5	38	53	90	4-19	68
30	1 1/4	133	37	5	50	65	100	4-19	78
40	1 1/2	138	43	5	54	69	105	4-19	82
50	2	153	54	5	68	83	120	4-19	96
65	2 1/2	173	69	5	86	101	140	4-19	116
80	3	183	80	5	98	112	150	8-19	124
100	4	208	102	5	120	138	175	8-19	150
125	5	248	127	5	145	166	210	8-23	180
150	6	278	150	5	168	190	240	8-23	210
200	8	328	198	5	216	247	290	12-23	260
250	10	398	249	5	270	306	355	12-25	326
300	12	443	300	5	324	352	400	16-25	372

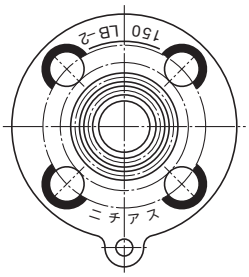
* If the gasket is used with a JIS B2210 steel flange or JIS B 2220 steel welded flange, the sealing part will shift to the I.D side of the flange. Therefore, please use with caution.

For JPI pipe flanges

Applicable standard
This dimension table is set by NICHIAS based on the butt welded flange of JPI-7S-15-2011.

Applicable flange
"Pipe Flanges for the Petroleum Industry" for JPI-7S-15-2011





Dimension Table 85

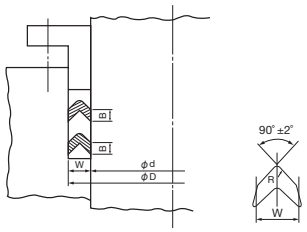
(Unit: mm)

Nominal flange diameter		Gasket			Diameter of sealing part		Bolt		Reference E
A	B	O.D A	I.D B	Thickness T	C	D	P.C.D.	n-ϕK	
15	1/2	85	18	5	30	—	60.3	4-16	42
20	3/4	95	22	5	32	44	69.9	4-16	52
25	1	103	29	5	38	50	79.4	4-16	60
(32)	(1 1/4)	111	39	5	47	59	88.9	4-16	70
40	1 1/2	121	44	5	53	68	98.4	4-16	79
50	2	146	55	5	65	83	120.7	4-19	99
65	2 1/2	173	70	5	81	101	139.7	4-19	118
80	3	186	81	5	94	112	152.4	4-19	130
100	4	223	103	5	124	148	190.5	8-19	168
(125)	(5)	249	128	5	150	174	215.9	8-22	190
150	6	274	152	5	172	196	241.3	8-22	212
200	8	337	200	5	222	246	298.5	8-22	270
250	10	401	251	6	276	300	362.0	12-25	330
300	12	477	302	6	335	365	431.8	12-25	400

* The flange nominal diameter in ( ) should not be used as much as possible.

Mold packing

Applicable standard
JIS B 2403-2009 "V packing" Table 2



Dimension Table 86

(Unit: mm)

Number	Nominal dimension			Height B		R
	Inner diameter d	Outer diameter D	Width W	Basic dimension	Tolerance	Minimum
H 6.3	6.3	16.3	5	2.5	±0.3	0.5
H 7.1	7.1	17.1				
H 8	8	18				
H 9	9	19				
H 10	10	20				
H 11.2	11.2	21.2				
H 12.5	12.5	22.5				
H 14	14	24				
H 16	16	26				
H 15	15	28	6.5	3	±0.3	0.75
H 18	18	31				
H 18.5	18.5	31.5				
H 20	20	33				
H 22.4	22.4	35.4				
H 25	25	38				
H 27	27	40				
H 28	28	41				
H 31.5	31.5	44.5				
H 32	32	45				
H 34	34	50	8	3.5	±0.3	1
H 35.5	35.5	51.5				
H 40	40	56				
H 45	45	61				
H 47	47	63				
H 50	50	66				
H 53	53	69				
H 55	55	71				
H 56	56	72				
H 60	60	76				
H 63	63	79				
H 64	64	80				
H 67	67	87	10	4	±0.3	2
H 70	70	90				
H 71	71	91				
H 75	75	95				
H 80	80	100				

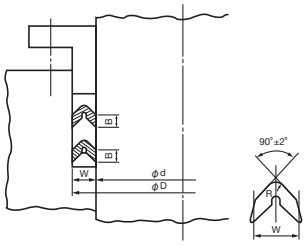
* B represents height per piece installed with a V-packing.

(Unit: mm)

Number	Nominal dimension			Height B		R
	Inner diameter d	Outer diameter D	Width W	Basic dimension	Tolerance	Minimum
H 85	85	105	10	4	±0.3	2
H 90	90	110				
H 92	92	112				
H 95	95	115				
H 100	100	120				
H 105	105	125				
H 106	106	126				
H 112	112	132				
H 118	118	138				
H 120	120	140				
H 125	125	150	12.5	5	±0.3	2
H 132	132	157				
H 135	135	160				
H 140	140	165				
H 145	145	170				
H 150	150	175				
H 155	155	180				
H 160	160	185				
H 165	165	190				
H 170	170	195				
H 175	175	200				
H 180	180	205				
H 190	190	215				
H 199	199	224				
H 200	200	225				
H 212	212	237				
H 224	224	249				
H 225	225	250				
H 236	236	261				
H 250	250	275				
H 265	265	297	16	6	±0.4	3
H 280	280	312				
H 300	300	332				

Molded packing with cloth

Applicable standard
JIS B 2403-2009 "V packing" Table 2



Dimension Table 87

(Unit: mm)

Number	Nominal dimension			Height B		R
	Inner diameter d	Outer diameter D	Width W	Basic dimension	Tolerance	Minimum
F 6.3	6.3	16.3	5	3	+0.5 -0.2	0.5
F 7.1	7.1	17.1				
F 8	8	18				
F 9	9	19				
F 10	10	20				
F 11.2	11.2	21.2				
F 12.5	12.5	22.5				
F 14	14	24				
F 16	16	26				
F 15	15	28	6.5	3	+0.5 -0.2	0.75
F 18	18	31				
F 18.5	18.5	31.5				
F 20	20	33				
F 22.4	22.4	35.4				
F 25	25	38				
F 27	27	40				
F 28	28	41				
F 31.5	31.5	44.5				
F 32	32	45				
F 34	34	50	8	4	+0.5 -0.2	1
F 35.5	35.5	51.5				
F 40	40	56				
F 45	45	61				
F 47	47	63				
F 50	50	66				
F 53	53	69				
F 55	55	71				
F 56	56	72				
F 60	60	76				
F 63	63	79				
F 64	64	80				
F 67	67	87	10	5	+0.5 -0.2	2
F 70	70	90				
F 71	71	91				
F 75	75	95				
F 80	80	100				

* B represents height per piece installed with a V-packing.

(Unit: mm)

Number	Nominal dimension			Height B		R
	Inner diameter d	Outer diameter D	Width W	Basic dimension	Tolerance	Minimum
F 85	85	105	10	5	+0.5 -0.2	2
F 90	90	110				
F 92	92	112				
F 95	95	115				
F 100	100	120				
F 105	105	125				
F 106	106	126				
F 112	112	132				
F 118	118	138				
F 120	120	140				
F 125	125	150	12.5	6	+0.5 -0.2	2
F 132	132	157				
F 135	135	160				
F 140	140	165				
F 145	145	170				
F 150	150	175				
F 155	155	180				
F 160	160	185				
F 165	165	190				
F 170	170	195				
F 175	175	200				
F 180	180	205				
F 190	190	215				
F 199	199	224				
F 200	200	225				
F 212	212	237				
F 224	224	249				
F 225	225	250				
F 236	236	261				
F 250	250	275				
F 265	265	297	16	7	+0.8 -0.3	3
F 280	280	312				
F 300	300	332				
F 315	315	347				
F 335	335	367				
F 355	355	387				
F 375	375	407				
F 400	400	432				
F 425	425	457				
F 450	450	482				
F 475	475	507				
F 500	500	532				
F 530	530	570	20	8	+1.2 -0.4	4
F 560	560	600				
F 600	600	640				
F 630	630	670				
F 670	670	710				
F 710	710	750				
F 750	750	790				
F 800	800	840				
F 850	850	890				
F 900	900	940				
F 950	950	990				
F 1000	1000	1040				

Flange Dimension Tables

- JIS pipe flange dimensions
- JPI pipe flange dimensions
- Bolt area and torque coefficient
- Design stress value of bolt material

Information

■ JIS flange and JPI flange

Flange commonly used in Japan includes JIS flange and JPI flange. JIS flanges are specified in JIS B 2220 "Steel pipe flanges", JIS B 2239 "Cast iron pipe flanges", etc., and JPI flanges are defined by the American Society of Mechanical Engineers (JPI) and the American Society of Mechanical Engineers (ASME). It is stipulated in the JPI standard created so that the flange standard of can be used in Japan.

■ Differences between ASME flanges and JPI flanges

Since the JPI flange standard is made with reference to the ASME flange standard, most of the dimensions are the same but the flange inner diameter of 300A (12B) or less is different. This is because the outer diameter and size of the pipe connected to the flange are different between JIS and American standards.

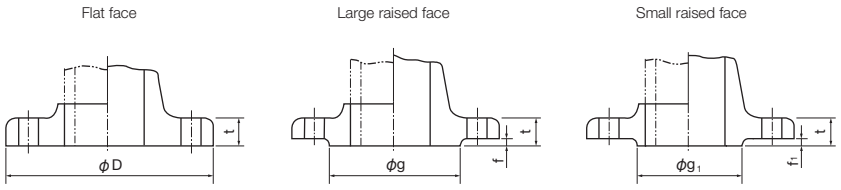
■ About ASME flange / JPI flange series A and series B

ASME integrated the API 605 and MSS SP-44 standards in 1990 and established a new large-diameter flange standard as ASME B16.47-1990. In ASME B16.47 and JPI-7S-43, the dimensions of MSS SP-44 are Series A and the dimensions of API 605 are Series B. Therefore, gaskets for ASME B16.47 and JPI-7S-43 Series A can be used for MSS SP-44 flanges, and gaskets for Series B can also be used for API 605 flanges.

■ (Old) About JIS B 2238-1996

JIS B 2220-2004 "Steel pipe flange" was created by integrating JIS B 2220-2001 "Steel welded pipe flange" and JIS B 2238-1996 "General rules for steel pipe flange". Due to this reorganization, JIS B 2238-1996 was abolished and replaced by this standard.

JIS pipe flange dimension table (JIS B 2220: 2012 steel pipe flange)



a. Gasket seat dimensions

(Unit: mm)

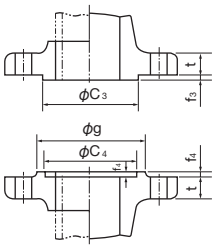
Nominal diameter	Large raised face												Small raised face	
	Nominal pressure 5K		Nominal pressure 10K		Nominal pressure 16K		Nominal pressure 20K		Nominal pressure 30K		Nominal pressure 40K & 63K		g_1	f_1
	g	f	g	f	g	f	g	f	g	f	g	f		
10	39	1	46	1	46	1	46	1	52	1	52	1	35	1
15	44	1	51	1	51	1	51	1	55	1	55	1	42	1
20	49	1	56	1	56	1	56	1	60	1	60	1	50	1
25	59	1	67	1	67	1	67	1	70	1	70	1	60	1
32	70	2	76	2	76	2	76	2	80	2	80	2	68	2
40	75	2	81	2	81	2	81	2	90	2	90	2	75	2
50	85	2	96	2	96	2	96	2	105	2	105	2	90	2
65	110	2	116	2	116	2	116	2	130	2	130	2	105	2
80	121	2	126	2	132	2	132	2	140	2	140	2	120	2
90	131	2	136	2	145	2	145	2	150	2	150	2	130	2
100	141	2	151	2	160	2	160	2	160	2	165	2	145	2
125	176	2	182	2	195	2	195	2	195	2	200	2	170	2
150	206	2	212	2	230	2	230	2	235	2	240	2	205	2
175	232	2	237	2	—	—	—	—	—	—	—	—	—	—
200	252	2	262	2	275	2	275	2	280	2	290	2	260	2
225	277	2	282	2	—	—	—	—	—	—	—	—	—	—
250	317	2	324	2	345	2	345	2	345	2	355	2	315	2
300	360	3	368	3	395	3	395	3	405	3	410	3	375	3
350	403	3	413	3	440	3	440	3	450	3	455	3	415	3
400	463	3	475	3	495	3	495	3	510	3	515	3	465	3
450	523	3	530	3	560	3	560	3	—	—	—	—	—	—
500	573	3	585	3	615	3	615	3	—	—	—	—	—	—
550	630	3	640	3	670	3	670	3	—	—	—	—	—	—
600	680	3	690	3	720	3	720	3	—	—	—	—	—	—
650	735	3	740	3	770	5	790	5	—	—	—	—	—	—
700	785	3	800	3	820	5	840	5	—	—	—	—	—	—
750	840	3	855	3	880	5	900	5	—	—	—	—	—	—
800	890	3	905	3	930	5	960	5	—	—	—	—	—	—
850	940	3	955	3	980	5	1020	5	—	—	—	—	—	—
900	990	3	1005	3	1030	5	1070	5	—	—	—	—	—	—
1000	1090	3	1110	3	1140	5	—	—	—	—	—	—	—	—
1100	1200	3	1220	3	1240	5	—	—	—	—	—	—	—	—
1200	1305	3	1325	3	1350	5	—	—	—	—	—	—	—	—
1300	—	—	—	—	1450	5	—	—	—	—	—	—	—	—
1350	1460	3	1480	3	1510	5	—	—	—	—	—	—	—	—
1400	—	—	—	—	1560	5	—	—	—	—	—	—	—	—
1500	1615	3	1635	3	1670	5	—	—	—	—	—	—	—	—

* Flange outer diameter "D" is gasket seating dimension of flat face on Table b to j.
  Flange thickness "t" is on Table b to j.
* Please refer to JIS B 2220 steel pipe flange Table 22 for the tolerance of gasket seating dimension.

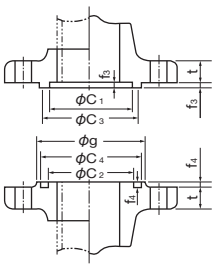
Reference
Nominal pressure 16K and 20K for nominal diameter 650 and above, g and f dimensions of large raised face, applying ISO 2441 (Pipeline flanges for general use shapes and dimensions of pressure-tight surfaces) standard.

JIS pipe flange dimension table

Male & female flange



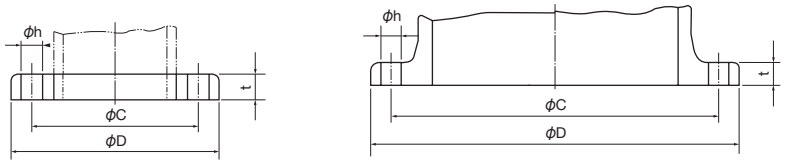
Groove flange



(Unit: mm)

Nominal diameter	Male & female flange				Groove flange					
	C_3	C_4	f_3	f_4	C_1	C_3	f_3	C_2	C_4	f_4
10	38	39	6	5	28	38	6	27	39	5
15	42	43	6	5	32	42	6	31	43	5
20	50	51	6	5	38	50	6	37	51	5
25	60	61	6	5	45	60	6	44	61	5
32	70	71	6	5	55	70	6	54	71	5
40	75	76	6	5	60	75	6	59	76	5
50	90	91	6	5	70	90	6	69	91	5
65	110	111	6	5	90	110	6	89	111	5
80	120	121	6	5	100	120	6	99	121	5
90	130	131	6	5	110	130	6	109	131	5
100	145	146	6	5	125	145	6	124	146	5
125	175	176	6	5	150	175	6	149	176	5
150	215 (212)	216 (213)	6	5	190 (187)	215 (212)	6	189 (186)	216 (213)	5
200	260	261	6	5	230	260	6	229	261	5
250	325	326	6	5	295	325	6	294	326	5
300	375 (370)	376 (371)	6	5	340	375 (370)	6	339	376 (371)	5
350	415	416	6	5	380	415	6	379	416	5
400	475	476	6	5	440	475	6	439	476	5
450	523	524	6	5	483	523	6	482	524	5
500	575	576	6	5	535	575	6	534	576	5
550	625	626	6	5	585	625	6	584	626	5
600	675	676	6	5	635	675	6	634	676	5
650	727	728	6	5	682	727	6	681	728	5
700	777	778	6	5	732	777	6	731	778	5
750	832	833	6	5	787	832	6	786	833	5
800	882	883	6	5	837	882	6	836	883	5
850	934	935	6	5	889	934	6	888	935	5
900	987	988	6	5	937	987	6	936	988	5
1000	1092	1094	6	5	1042	1092	6	1040	1094	5
1100	1192	1194	6	5	1142	1192	6	1140	1194	5
1200	1292	1294	6	5	1237	1292	6	1235	1294	5
1300	1392	1394	6	5	1337	1392	6	1335	1394	5
1350	1442	1444	6	5	1387	1442	6	1385	1444	5
1400	1492	1494	6	5	1437	1492	6	1435	1494	5
1500	1592	1594	6	5	1537	1592	6	1535	1594	5

* Flange thickness "t" is on Table b to j.
* Male & female and groove type do not apply to 5k flange and 10k thin flange.
* The g dimension of the female seat and the groove type seat depends on the g dimension of the raised face surface (RF). However, for the 10K flange, the shape shown by the imaginary line in the figure is used.
* Dimensions in parentheses ( ) apply to 10K flanges.



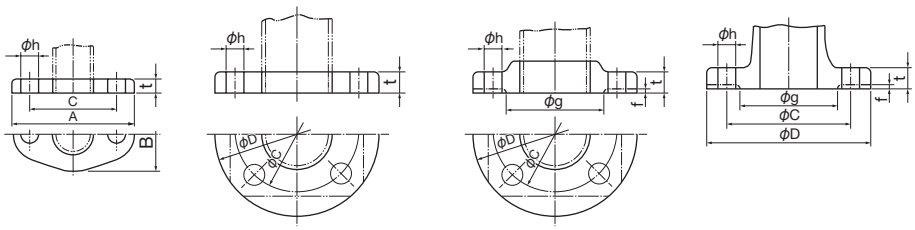
b. 2K flange standard dimension

(Unit: mm)

Nominal diameter	Steel pipe outer diameter	Flange outer diameter D	Flange thickness t		Bolt hole			Screw bolt
			carbon steel	Gray cast iron	Centre circle diameter C	Quantity	Diameter h	
450	457.2	605	22	28	555	16	23	M20
500	508.0	655	22	28	605	20	23	M20
(550)	558.8	720	24	30	665	20	25	M22
600	609.6	770	24	30	715	20	25	M22
(650)	660.4	825	24	30	770	24	25	M22
700	711.2	875	24	30	820	24	25	M22
(750)	762.0	945	24	32	880	24	27	M24
800	812.8	995	24	32	930	24	27	M24
(850)	863.6	1045	24	32	980	24	27	M24
900	914.4	1095	24	32	1030	24	27	M24
1000	1016.0	1195	26	34	1130	28	27	M24
(1100)	1117.6	1305	26	34	1240	28	27	M24
1200	1219.2	1420	26	36	1350	32	27	M24
1350	1371.6	1575	26	36	1505	32	27	M24
1500	1524.0	1730	28	38	1660	36	27	M24

* Apply for 5K flange nominal diameter 400 or below standard dimension.
* The dimension in bracket ( ) should not be used as much as possible
* Gasket seating dimension is accordance with 5K nominal pressure flange on Table A.
* Bolt hole diameter (h), JIS B1001 (counterbore diameter and bolt hole diameter) for tertiary grade can be used.

JIS pipe flange dimension table

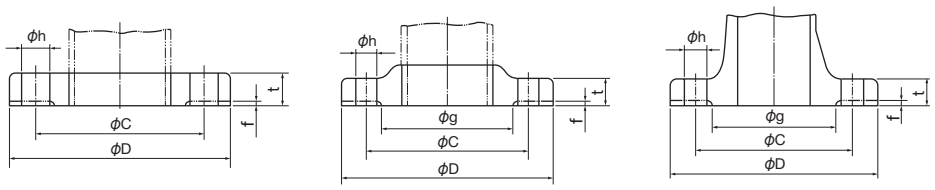


c. 5K flange standard dimension

(Unit: mm)

Nominal diameter	Steel pipe outer diameter	Flange outer diameter D (A×B)	Various parts of flange dimensions				bolt hole			Screw bolt
			t		f	Diameter g	Centre circle diameter C	Quantity	Diameter h	
			Other than gray cast iron	Gray cast iron						
10	17.3	75 (75×45)	9	12	1	39	55	4 (2)	12	M10
15	21.7	80 (80×50)	9	12	1	44	60	4 (2)	12	M10
20	27.2	85	10	14	1	49	65	4	12	M10
25	34.0	95	10	14	1	59	75	4	12	M10
32	42.7	115	12	16	2	70	90	4	15	M12
40	48.6	120	12	16	2	75	95	4	15	M12
50	60.5	130	14	16	2	85	105	4	15	M12
65	76.3	155	14	18	2	110	130	4	15	M12
80	89.1	180	14	18	2	121	145	4	19	M16
(90)	101.6	190	14	18	2	131	155	4	19	M16
100	114.3	200	16	20	2	141	165	8	19	M16
125	139.8	235	16	20	2	176	200	8	19	M16
150	165.2	265	18	22	2	206	230	8	19	M16
(175)	190.7	300	18	22	2	232	260	8	23	M20
200	216.3	320	20	24	2	252	280	8	23	M20
(225)	241.8	345	20	24	2	277	305	12	23	M20
250	267.4	385	22	26	2	317	345	12	23	M20
300	318.5	430	22	28	3	360	390	12	23	M20
350	355.6	480	24	30	3	403	435	12	25	M22
400	406.4	540	24	30	3	463	495	16	25	M22
450	457.2	605	24	30	3	523	555	16	25	M22
500	508.0	655	24	32	3	573	605	20	25	M22
(550)	558.8	720	26	32	3	630	665	20	27	M24
600	609.6	770	26	32	3	680	715	20	27	M24
(650)	660.4	825	26	34	3	735	770	24	27	M24
700	711.2	875	26	34	3	785	820	24	27	M24
(750)	762.0	945	28	36	3	840	880	24	33	M30
800	812.8	995	28	36	3	890	930	24	33	M30
(850)	863.6	1045	28	38	3	940	980	24	33	M30
900	914.4	1095	30	38	3	990	1030	24	33	M30
1000	1016.0	1195	32	40	3	1090	1130	28	33	M30
(1100)	1117.6	1305	32	42	3	1200	1240	28	33	M30
1200	1219.2	1420	34	46	3	1305	1350	32	33	M30
1350	1371.6	1575	34	48	3	1460	1505	32	33	M30
1500	1524.0	1730	36	52	3	1615	1660	36	33	M30

* The dimension in bracket ( ) should not be used as much as possible.
* For the gasket seat of the flange, may be large raised face of two-dot chain line is necessary.
* For those nominal diameter size 50 or below, it is possible to use those rectangular as shown by two-dot chain line.
* Bolt hole diameter (h),in case of M30 or more nominal thread size bolt, it is obtained by second grade of JIS B1001.
  It should be take note that in case of using bolt more than M20, use the average bolt of JIS B1180 in general pump, etc. when it is not according to the bolt hole diameter (h) in table by agreement between the interested parties, it can be adapted for 3rd level of JIS B1001.



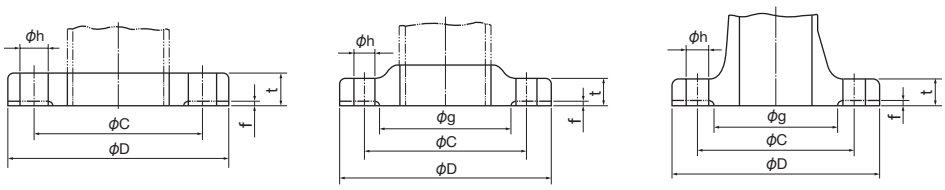
d. 10K flange standard dimension

(Unit: mm)

Nominal diameter	Steel pipe outer diameter	Flange outer diameter D	Various parts of flange dimensions				bolt hole			Screw bolt
			t		f	Diameter g	Centre circle diameter C	Quantity	Diameter h	
			Other than gray cast iron	Gray cast iron						
10	17.3	90	12	14	1	46	65	4	15	M12
15	21.7	95	12	16	1	51	70	4	15	M12
20	27.2	100	14	18	1	56	75	4	15	M12
25	34.0	125	14	18	1	67	90	4	19	M16
32	42.7	135	16	20	2	76	100	4	19	M16
40	48.6	140	16	20	2	81	105	4	19	M16
50	60.5	155	16	20	2	96	120	4	19	M16
65	76.3	175	18	22	2	116	140	4	19	M16
80	89.1	185	18	22	2	126	150	8	19	M16
(90)	101.6	195	18	22	2	136	160	8	19	M16
100	114.3	210	18	24	2	151	175	8	19	M16
125	139.8	250	20	24	2	182	210	8	23	M20
150	165.2	280	22	26	2	212	240	8	23	M20
(175)	190.7	305	22	26	2	237	265	12	23	M20
200	216.3	330	22	26	2	262	290	12	23	M20
(225)	241.8	350	22	28	2	282	310	12	23	M20
250	267.4	400	24	30	2	324	355	12	25	M22
300	318.5	445	24	32	3	368	400	16	25	M22
350	355.6	490	26	34	3	413	445	16	25	M22
400	406.4	560	28	36	3	475	510	16	27	M24
450	457.2	620	30	38	3	530	565	20	27	M24
500	508.0	675	30	40	3	585	620	20	27	M24
(550)	558.8	745	32	42	3	640	680	20	33	M30
600	609.6	795	32	44	3	690	730	24	33	M30
(650)	660.4	845	34	46	3	740	780	24	33	M30
700	711.2	905	34	48	3	800	840	24	33	M30
(750)	762.0	970	36	50	3	855	900	24	33	M30
800	812.8	1020	36	52	3	905	950	28	33	M30
(850)	863.6	1070	36	52	3	955	1000	28	33	M30
900	914.4	1120	38	54	3	1005	1050	28	33	M30
1000	1016.0	1235	40	58	3	1110	1160	28	39	M36
(1100)	1117.6	1345	42	62	3	1220	1270	28	39	M36
1200	1219.2	1465	44	66	3	1325	1380	32	39	M36
1350	1371.6	1630	48	70	3	1480	1540	36	45	M42
1500	1524.0	1795	50	74	3	1635	1700	40	45	M42

* The dimension in bracket ( ) should not be used as much as possible.
* For the gasket seat of the flange, may be large raised face of two-dot chain line is necessary.
* Bolt hole diameter (h),in case of M30 or more nominal thread size bolt, it is obtained by second grade of JIS B1001.
  It should be take note that in case of using bolt more than M20, use the average bolt of JIS B1180 in general pump, etc. when it is not according to the bolt hole diameter (h) in table by agreement between the interested parties, it can be adapted for 3rd level of JIS B1001.

JIS pipe flange dimension table

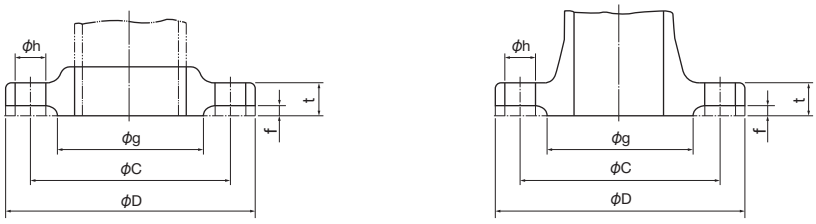


e. 10K flange thin flange dimension

(Unit: mm)

Nominal diameter	Steel pipe outer diameter	Flange outer diameter D	Various parts of flange dimensions				bolt hole			Screw bolt
			t		f	Diameter g	Centre circle diameter C	Quantity	Diameter h	
			Other than gray cast iron	Gray cast iron						
10	17.3	90	9	12	1	46	65	4	12	M10
15	21.7	95	9	12	1	51	70	4	12	M10
20	27.2	100	10	14	1	56	75	4	12	M10
25	34.0	125	12	16	1	67	90	4	15	M12
32	42.7	135	12	18	2	76	100	4	15	M12
40	48.6	140	12	18	2	81	105	4	15	M12
50	60.5	155	14	18	2	96	120	4	15	M12
65	76.3	175	14	18	2	116	140	4	15	M12
80	89.1	185	14	18	2	126	150	8	15	M12
(90)	101.6	195	14	18	2	136	160	8	15	M12
100	114.3	210	16	20	2	151	175	8	15	M12
125	139.8	250	18	22	2	182	210	8	19	M16
150	165.2	280	18	22	2	212	240	8	19	M16
(175)	190.7	305	20	24	2	237	265	12	19	M16
200	216.3	330	20	24	2	262	290	12	19	M16
(225)	241.8	350	20	24	2	282	310	12	19	M16
250	267.4	400	22	26	2	324	355	12	23	M20
300	318.5	445	22	28	3	368	400	16	23	M20
350	355.6	490	24	28	3	413	445	16	23	M20
400	406.4	560	24	30	3	475	510	16	25	M22

* The dimension in bracket ( ) should not be used as much as possible.
* For the gasket seat of the flange, may be large raised face of two-dot chain line is necessary.
* Bolt hole diameter (h),in case of M30 or more nominal thread size bolt, it is obtained by second grade of JIS B1001.
  It should be take note that in case of using bolt more than M20, use the average bolt of JIS B1180 in general pump, etc. when it is not according to the bolt hole diameter (h) in table by agreement between the interested parties, it can be adapted for 3rd level of JIS B1001.



f. 16K flange standard dimension

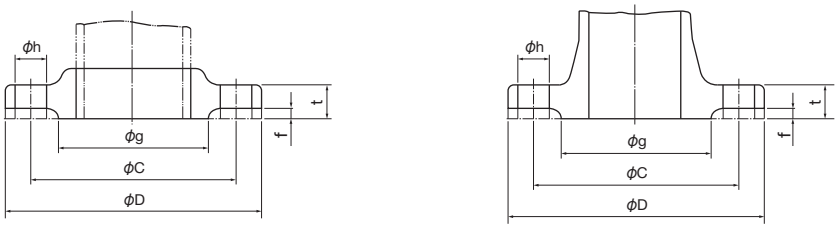
(Unit: mm)

Nominal diameter	Steel pipe outer diameter	Flange outer diameter D	Various parts of flange dimensions				bolt hole			Screw bolt
			t		f	Diameter g	Centre circle diameter C	Quantity	Diameter h	
			Other than gray cast iron	Gray cast iron						
10	17.3	90	12	—	1	46	65	4	15	M12
15	21.7	95	12	—	1	51	70	4	15	M12
20	27.2	100	14	—	1	56	75	4	15	M12
25	34.0	125	14	—	1	67	90	4	19	M16
32	42.7	135	16	—	2	76	100	4	19	M16
40	48.6	140	16	—	2	81	105	4	19	M16
50	60.5	155	16	20	2	96	120	8	19	M16
65	76.3	175	18	22	2	116	140	8	19	M16
80	89.1	200	20	24	2	132	160	8	23	M20
(90)	101.6	210	20	24	2	145	170	8	23	M20
100	114.3	225	22	26	2	160	185	8	23	M20
125	139.8	270	22	26	2	195	225	8	25	M22
150	165.2	305	24	28	2	230	260	12	25	M22
200	216.3	350	26	30	2	275	305	12	25	M22
250	267.4	430	28	34	2	345	380	12	27	M24
300	318.5	480	30	36	3	395	430	16	27	M24
350	355.6	540	34	38	3	440	480	16	33	M30×3
400	406.4	605	38	42	3	495	540	16	33	M30×3
450	457.2	675	40	46	3	560	605	20	33	M30×3
500	508.0	730	42	50	3	615	660	20	33	M30×3
(550)	558.8	795	44	54	3	670	720	20	39	M36×3
600	609.6	845	46	58	3	720	770	24	39	M36×3
(650)	660.4	895	48	—	5	770	820	24	39	M36×3
700	711.2	960	50	—	5	820	875	24	42	M39×3
(750)	762.0	1020	52	—	5	880	935	24	42	M39×3
800	812.8	1085	54	—	5	930	990	24	48	M45×3
(850)	863.6	1135	56	—	5	980	1040	24	48	M45×3
900	914.4	1185	58	—	5	1030	1090	28	48	M45×3
1000	1016.0	1320	62	—	5	1140	1210	28	56	M52×3
(1100)	1117.6	1420	66	—	5	1240	1310	32	56	M52×3
1200	1219.2	1530	70	—	5	1350	1420	32	56	M52×3
(1300)	1320.8	1645	74	—	5	1450	1530	32	62	M56×3
1350	1371.6	1700	76	—	5	1510	1590	32	62	M56×3
(1400)	1422.4	1755	78	—	5	1560	1640	36	62	M56×3
1500	1524.0	1865	80	—	5	1670	1750	36	62	M56×3

* The dimension in bracket ( ) should not be used as much as possible.
* For gasket seat of the flange, may be a flat face as two-dot chain line is necessary for nominal diameter below 600.
* Bolt hole diameter (h), if nominal bolt thread size more than M30 X3, followed by JIS B1001 grade 2.

Reference Nominal size 650 and above except 850 and 1350 is accordance with nominal pressure 25 bar (1 bar=0.1MPa), ISO 2084 (Pipeline flanges for general use-Metric series-Mating dimensions)

JIS pipe flange dimension table



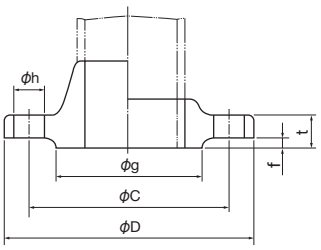
g. 20K flange standard dimension

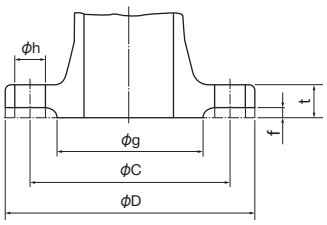
(Unit: mm)

Nominal diameter	Steel pipe outer diameter	Flange outer diameter D	Various parts of flange dimensions				bolt hole			Screw bolt
			t		f	Diameter g	Centre circle diameter C	Quantity	Diameter h	
			Other than gray cast iron	Gray cast iron						
10	17.3	90	14	16	1	46	65	4	15	M12
15	21.7	95	14	16	1	51	70	4	15	M12
20	27.2	100	16	18	1	56	75	4	15	M12
25	34.0	125	16	20	1	67	90	4	19	M16
32	42.7	135	18	20	2	76	100	4	19	M16
40	48.6	140	18	22	2	81	105	4	19	M16
50	60.5	155	18	22	2	96	120	8	19	M16
65	76.3	175	20	24	2	116	140	8	19	M16
80	89.1	200	22	26	2	132	160	8	23	M20
(90)	101.6	210	24	28	2	145	170	8	23	M20
100	114.3	225	24	28	2	160	185	8	23	M20
125	139.8	270	26	30	2	195	225	8	25	M22
150	165.2	305	28	32	2	230	260	12	25	M22
200	216.3	350	30	34	2	275	305	12	25	M22
250	267.4	430	34	38	2	345	380	12	27	M24
300	318.5	480	36	40	3	395	430	16	27	M24
350	355.6	540	40	44	3	440	480	16	33	M30×3
400	406.4	605	46	50	3	495	540	16	33	M30×3
450	457.2	675	48	54	3	560	605	20	33	M30×3
500	508.0	730	50	58	3	615	660	20	33	M30×3
(550)	558.8	795	52	62	3	670	720	20	39	M36×3
600	609.6	845	54	66	3	720	770	24	39	M36×3
(650)	660.4	945	60	—	5	790	850	24	48	M45×3
700	711.2	995	64	—	5	840	900	24	48	M45×3
(750)	762.0	1080	68	—	5	900	970	24	56	M52×3
800	812.8	1140	72	—	5	960	1030	24	56	M52×3
(850)	863.6	1200	74	—	5	1020	1090	24	56	M52×3
900	914.4	1250	76	—	5	1070	1140	28	56	M52×3

* The dimension in bracket ( ) should not be used as much as possible.
* For gasket seat of the flange, may be a flat face as two-dot chain line is necessary for nominal diameter below 600.
* Bolt hole diameter (h), if nominal bolt thread size below M16, followed by JIS B1001 grade 3.

Reference Nominal size 650 and above except 850 is accordance with nominal pressure 40 bar (1 bar=0.1MPa), ISO 2084





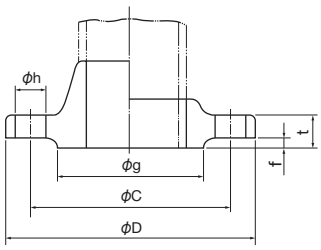
h. 30K flange standard dimension

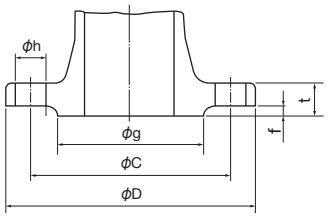
(Unit: mm)

Nominal diameter	Steel pipe outer diameter	Flange outer diameter D	Various parts of flange dimensions			bolt hole			Screw bolt
			t	f	Diameter g	Centre circle diameter C	Quantity	Diameter h	
10	17.3	110	16	1	52	75	4	19	M16
15	21.7	115	18	1	55	80	4	19	M16
20	27.2	120	18	1	60	85	4	19	M16
25	34.0	130	20	1	70	95	4	19	M16
32	42.7	140	22	2	80	105	4	19	M16
40	48.6	160	22	2	90	120	4	23	M20
50	60.5	165	22	2	105	130	8	19	M16
65	76.3	200	26	2	130	160	8	23	M20
80	89.1	210	28	2	140	170	8	23	M20
(90)	101.6	230	30	2	150	185	8	25	M22
100	114.3	240	32	2	160	195	8	25	M22
125	139.8	275	36	2	195	230	8	25	M22
150	165.2	325	38	2	235	275	12	27	M24
200	216.3	370	42	2	280	320	12	27	M24
250	267.4	450	48	2	345	390	12	33	M30×3
300	318.5	515	52	3	405	450	16	33	M30×3
350	355.6	560	54	3	450	495	16	33	M30×3
400	406.4	630	60	3	510	560	16	39	M36×3

* The dimension in bracket ( ) should not be used as much as possible.
* Bolt hole diameter (h), if nominal bolt thread size more than M30 x 3, followed by JIS B1001 grade 2.

JIS pipe flange dimension table



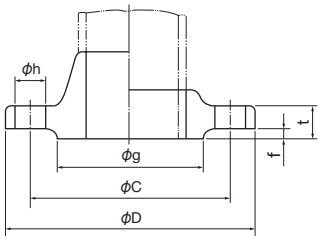


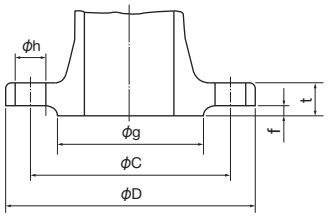
i. 40K flange standard dimension

(Unit: mm)

Nominal diameter	Steel pipe outer diameter	Flange outer diameter D	Various parts of flange dimensions			bolt hole			Screw bolt
			t	f	Diameter g	Centre circle diameter C	Quantity	Diameter h	
10	17.3	110	18	1	52	75	4	19	M16
15	21.7	115	20	1	55	80	4	19	M16
20	27.2	120	20	1	60	85	4	19	M16
25	34.0	130	22	1	70	95	4	19	M16
32	42.7	140	24	2	80	105	4	19	M16
40	48.6	160	24	2	90	120	4	23	M20
50	60.5	165	26	2	105	130	8	19	M16
65	76.3	200	30	2	130	160	8	23	M20
80	89.1	210	32	2	140	170	8	23	M20
(90)	101.6	230	34	2	150	185	8	25	M22
100	114.3	250	36	2	165	205	8	25	M22
125	139.8	300	40	2	200	250	8	27	M24
150	165.2	355	44	2	240	295	12	33	M30×3
200	216.3	405	50	2	290	345	12	33	M30×3
250	267.4	475	56	2	355	410	12	33	M30×3
300	318.5	540	60	3	410	470	16	39	M36×3
350	355.6	585	64	3	455	515	16	39	M36×3
400	406.4	645	70	3	515	570	16	39	M36×3

* The dimension in bracket ( ) should not be used as much as possible.
* Bolt hole diameter (h), if nominal bolt thread size more than M30 x 3, followed by JIS B1001 grade 2.





j. 63K flange standard dimension

(Unit: mm)

Nominal diameter	Steel pipe outer diameter	Flange outer diameter D	Various parts of flange dimensions			bolt hole			Screw bolt
			t	f	Diameter g	Centre circle diameter C	Quantity	Diameter h	
10	17.3	115	23	1	52	80	4	19	M16
15	21.7	120	23	1	55	85	4	19	M16
20	27.2	135	25	1	60	95	4	23	M20
25	34.0	140	27	1	70	100	4	23	M20
32	42.7	150	30	2	80	110	4	23	M20
40	48.6	175	32	2	90	130	4	25	M22
50	60.5	185	34	2	105	145	8	23	M20
65	76.3	220	38	2	130	175	8	25	M22
80	89.1	230	40	2	140	185	8	25	M22
(90)	101.6	255	42	2	150	205	8	27	M24
100	114.3	270	44	2	165	220	8	27	M24
125	139.8	325	50	2	200	265	8	33	M30×3
150	165.2	365	54	2	240	305	12	33	M30×3
200	216.3	425	60	2	290	360	12	33	M30×3
250	267.4	500	68	2	355	430	12	39	M36×3
300	318.5	560	77	3	410	485	16	39	M36×3
350	355.6	615	81	3	455	530	16	46	M42×3
400	406.4	680	89	3	515	590	16	46	M42×3

* The dimension in bracket ( ) should not be used as much as possible.
* Bolt hole diameter (h), if nominal bolt thread size more than M30 x 3, followed by JIS B1001 grade 2.

JIS steel piping dimension

a. Carbon steel and alloy steel

(Unit: mm)

Nominal diameter		Outer diameter mm	Thickness									
A	B		Sch10	Sch20	Sch30	Sch40	Sch60	Sch80	Sch100	Sch120	Sch140	Sch160
6	1/8	10.5	—	—	—	1.7	2.2	2.4	—	—	—	—
8	1/4	13.8	—	—	—	2.2	2.4	3.0	—	—	—	—
10	3/8	17.3	—	—	—	2.3	2.8	3.2	—	—	—	—
15	1/2	21.7	—	—	—	2.8	3.2	3.7	—	—	—	4.7
20	3/4	27.2	—	—	—	2.9	3.4	3.9	—	—	—	5.5
25	1	34.0	—	—	—	3.4	3.9	4.5	—	—	—	6.4
32	1 1/4	42.7	—	—	—	3.6	4.5	4.9	—	—	—	6.4
40	1 1/2	48.6	—	—	—	3.7	4.5	5.1	—	—	—	7.1
50	2	60.5	—	3.2	—	3.9	4.9	5.5	—	—	—	8.7
65	2 1/2	76.3	—	4.5	—	5.2	6.0	7.0	—	—	—	9.5
80	3	89.1	—	4.5	—	5.5	6.6	7.6	—	—	—	11.1
90	3 1/2	101.6	—	4.5	—	5.7	7.0	8.1	—	—	—	12.7
100	4	114.3	—	4.9	—	6.0	7.1	8.6	—	11.1	—	13.5
125	5	139.8	—	5.1	—	6.6	8.1	9.5	—	12.7	—	15.9
150	6	165.2	—	5.5	—	7.1	9.3	11.0	—	14.3	—	18.2
200	8	216.3	—	6.4	7.0	8.2	10.3	12.7	15.1	18.2	20.6	23.0
250	10	267.4	—	6.4	7.8	9.3	12.7	15.1	18.2	21.4	25.4	28.6
300	12	318.5	—	6.4	8.4	10.3	14.3	17.4	21.4	25.4	28.6	33.3
350	14	355.6	6.4	7.9	9.5	11.1	15.1	19.0	23.8	27.8	31.8	35.7
400	16	406.4	6.4	7.9	9.5	12.7	16.7	21.4	26.2	30.9	36.5	40.5
450	18	457.2	6.4	7.9	11.1	14.3	19.0	23.8	29.4	34.9	39.7	45.2
500	20	508.0	6.4	9.5	12.7	15.1	20.6	26.2	32.5	38.1	44.4	50.0
550	22	558.8	6.4	9.5	12.7	15.9	22.2	28.6	34.9	41.3	47.6	54.0
600	24	609.6	6.4	9.5	14.3	17.5	24.6	31.0	38.9	46.0	52.4	59.5
650	26	660.4	7.9	12.7	—	18.9	26.4	34.0	41.6	49.1	56.6	64.2

* Taken from "JIS G 3454-2017" Carbon Steel Pipe for Pressure Piping "Table 6, JIS G 3455-2016 "Carbon Steel Pipes for High Pressure Piping" Table 7, JIS G 3456-2016 "Carbon Steel Pipes for High Temperature Service" Table 7, JIS G 3458-2018 "Alloy Steel Pipes" Table 7 "

Schedule number	Sch10	Sch20	Sch30	Sch40	Sch60	Sch80	Sch100	Sch120	Sch140	Sch160
Hydraulic test pressure MPa	2.0	3.5	5.0	6.0	9.0	12	15	18	20	20

b. Stainless steel

(Unit: mm)

Nominal diameter		Outer diameter mm	Thickness						
A	B		Sch5S	Sch10S	Sch20S	Sch40	Sch80	Sch120	Sch160
6	1/8	10.5	1.0	1.2	1.5	1.7	2.4	—	—
8	1/4	13.8	1.2	1.65	2.0	2.2	3.0	—	—
10	3/8	17.3	1.2	1.65	2.0	2.3	3.2	—	—
15	1/2	21.7	1.65	2.1	2.5	2.8	3.7	—	4.7
20	3/4	27.2	1.65	2.1	2.5	2.9	3.9	—	5.5
25	1	34.0	1.65	2.8	3.0	3.4	4.5	—	6.4
32	1 1/4	42.7	1.65	2.8	3.0	3.6	4.9	—	6.4
40	1 1/2	48.6	1.65	2.8	3.0	3.7	5.1	—	7.1
50	2	60.5	1.65	2.8	3.5	3.9	5.5	—	8.7
65	2 1/2	76.3	2.1	3.0	3.5	5.2	7.0	—	9.5
80	3	89.1	2.1	3.0	4.0	5.5	7.6	—	11.1
90	3 1/2	101.6	2.1	3.0	4.0	5.7	8.1	—	12.7
100	4	114.3	2.1	3.0	4.0	6.0	8.6	11.1	13.5
125	5	139.8	2.8	3.4	5.0	6.6	9.5	12.7	15.9
150	6	165.2	2.8	3.4	5.0	7.1	11.0	14.3	18.2
200	8	216.3	2.8	4.0	6.5	8.2	12.7	18.2	23.0
250	10	267.4	3.4	4.0	6.5	9.3	15.1	21.4	28.6
300	12	318.5	4.0	4.5	6.5	10.3	17.4	25.4	33.3
350	14	355.6	—	—	—	11.1	19.0	27.8	35.7
400	16	406.4	—	—	—	12.7	21.4	30.9	40.5
450	18	457.2	—	—	—	14.3	23.8	34.9	45.2
500	20	508.0	—	—	—	15.1	26.2	38.1	50.0
550	22	558.8	—	—	—	15.9	28.6	41.3	54.0
600	24	609.6	—	—	—	17.5	31.0	46.0	59.5
650	26	660.4	—	—	—	18.9	34.0	49.1	64.2

* From "JIS G 3459-2016" Stainless Steel Piping "Tables 7 and 8"

Schedule number	Sch5S	Sch10S	Sch20S	Sch40	Sch80	Sch120	Sch160
Hydraulic test pressure MPa	1.5	2.0	3.5	6.0	12	18	20

JPI pipe flange dimension table (JPI-7S-15-2011 pipe flanges for the petroleum industry)

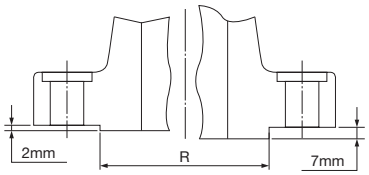
a. Gasket seat dimensions

(Unit: mm)

Nominal diameter		Outer diameter						Inner diameter		Outer diameter (Minimum)	
		Raised face, Large male, Large tongue	Small male	Small tongue	Large female, Large groove	Small female	Small groove	Large tongue, small tongue	Large groove, small groove	Small female, small groove	Large female, Large groove
A	B	R	S	T	W	X	Y	U	Z	K	L
15	1/2	34.9	18.3	35.1	36.5	19.9	36.5	25.4	23.8	44	46
20	3/4	42.9	23.9	42.9	44.4	25.4	44.4	33.3	31.8	52	54
25	1	50.8	30.2	47.8	52.4	31.8	49.2	38.1	36.5	57	62
(32)	(1 1/4)	63.5	38.1	57.2	65.1	39.7	58.7	47.6	46.0	67	75
40	1 1/2	73.0	44.4	63.5	74.6	46.0	65.1	54.0	52.4	73	84
50	2	92.1	57.2	82.6	93.7	58.8	84.1	73.0	71.4	92	103
65	2 1/2	104.8	68.3	95.2	106.4	69.8	96.8	85.7	84.1	105	116
80	3	127.0	84.1	117.5	128.6	85.7	119.1	108.0	106.4	127	138
(90)	(3 1/2)	139.7	96.8	130.2	141.3	98.4	131.8	120.6	119.1	140	151
100	4	157.2	109.5	144.5	158.8	111.1	146.0	131.8	130.2	157	168
(125)	(5)	185.7	136.5	173.0	187.5	138.1	174.6	160.3	158.8	186	197
150	6	215.9	161.9	203.2	217.5	163.5	204.8	190.5	188.9	216	227
200	8	269.9	212.7	254.0	271.5	214.3	255.6	238.1	236.5	270	281
250	10	323.8	266.7	304.8	325.4	268.3	306.4	285.8	284.2	324	335
300	12	381.0	317.5	362.0	382.6	319.1	363.5	342.9	341.3	381	392
350	14	412.8	349.2	393.7	414.3	350.8	395.3	374.6	373.1	413	424
400	16	469.9	400.0	447.5	471.5	401.6	449.3	425.4	423.9	470	481
450	18	533.4	450.8	511.2	535.0	452.4	512.8	489.0	487.4	533	544
500	20	584.2	501.6	558.8	585.8	503.2	560.4	533.4	531.8	584	595
600	24	692.2	603.2	666.8	693.7	604.8	668.3	641.4	639.8	692	703

* To prevent the compression failure of gasket, reduce the inner diameter of pipes or fittings so that there is enough seating area when using small male and female.
* Large male, large female, large tongue and large groove are not applied to class 150 (PN 20).
* This table is same dimension shown in JPI-7S-15-2011 "Pipe flanges for the Petroleum Industry" Appendix Table 16
* The flange nominal diameter in ( ) should not be used as much as possible.

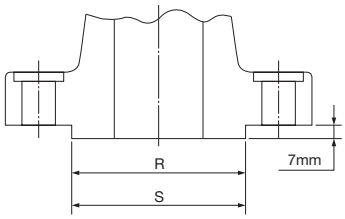
Raised face



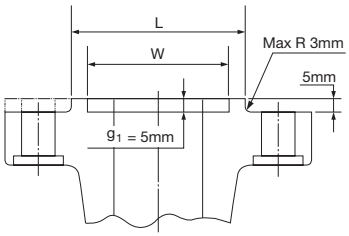
Class 300 (PN50) or less

Class 400 (PN65) or more

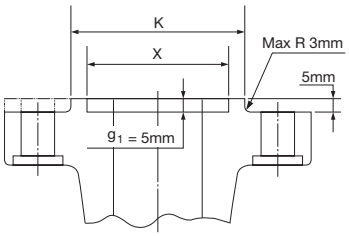
Large male face
Small male face



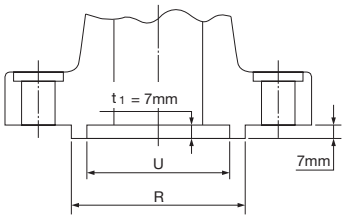
Large female



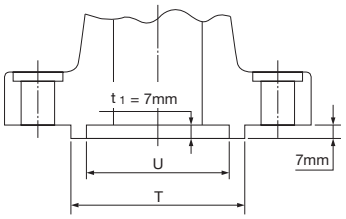
Small female



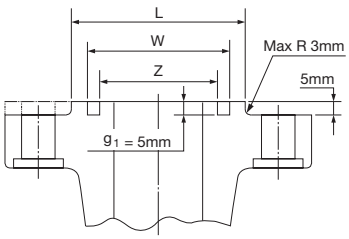
Large tongue



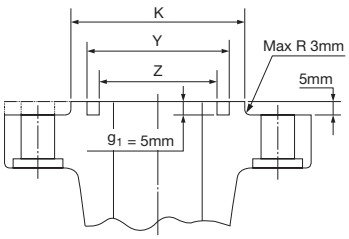
Small tongue



Large groove



Small groove



JPI pipe flange dimension table

b. Class 150 Flange dimension (raised face)

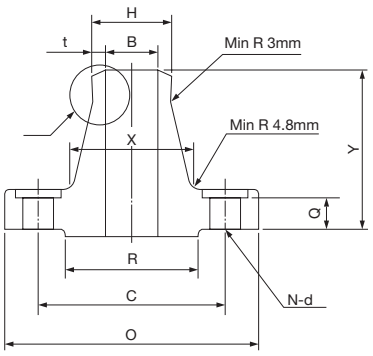
(Unit: mm)

Nominal diameter		Outer diameter	Inner diameter			Hub diameter	Hub tip diameter	Dia. of the RF diameter	Thickness (min)		Total length		
			Slip-on type, socket weld type	Butt welding type, socket weld type	Lap joint type				Other than lap joint	Lap joint	Slip on type, socket weld type, screwed type	Lap joint	Butt weld type
A	B	O	B_0	B	B_1	X	H	R	Q		Y_1	Y_2	Y
15	1/2	90	22.2	16.1	23.4	30	21.7	34.9	9.6	11.2	14	16	46
20	3/4	100	27.7	21.4	28.9	38	27.2	42.9	11.2	12.7	14	16	51
25	1	110	34.5	27.2	35.6	49	34.0	50.8	12.7	14.3	16	17	54
(32)	(1 1/4)	115	43.2	35.5	44.3	59	42.7	63.5	14.3	15.9	19	21	56
40	1 1/2	125	49.1	41.2	50.4	65	48.6	73.0	15.9	17.5	21	22	60
50	2	150	61.1	52.7	62.7	78	60.5	92.1	17.5	19.1	24	25	62
65	2 1/2	180	77.1	65.9	78.7	90	76.3	104.8	20.7	22.3	27	29	68
80	3	190	90.0	78.1	91.6	108	89.1	127.0	22.3	23.9	29	30	68
(90)	(3 1/2)	215	102.6	90.2	104.1	122	101.6	139.7	22.3	23.9	30	32	70
100	4	230	115.4	102.3	116.9	135	114.3	157.2	22.3	23.9	32	33	75
(125)	(5)	255	141.2	126.6	143.0	164	139.8	185.7	22.3	23.9	35	36	87
150	6	280	166.6	151.0	168.4	192	165.2	215.9	23.9	25.4	38	40	87
200	8	345	218.0	199.9	219.5	246	216.3	269.9	27.0	28.6	43	44	100
250	10	405	269.5	248.8	271.7	305	267.4	323.8	28.6	30.2	48	49	100
300	12	485	321.0	297.9	322.8	365	318.5	381.0	30.2	31.8	54	56	113
350	14	535	358.1	As specified	360.2	400	355.6	412.8	33.4	35.0	56	79	125
400	16	595	409.0		411.2	457	406.4	469.9	35.0	36.6	62	87	125
450	18	635	460.0		462.3	505	457.2	533.4	38.1	39.7	67	97	138
500	20	700	511.0		514.4	559	508.0	584.2	41.3	42.9	71	103	143
600	24	815	613.0		616.0	663	609.6	692.2	46.1	47.7	81	111	151

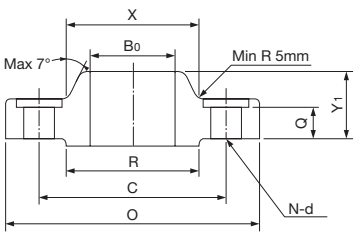
Nominal diameter		Depth of socket	Corner radius	Bolt hole			Screw bolt		Bolt length	
				BCD	Bolt no.	Hole diameter	Unified	Metric	(Reference)	
A	B	D	R	C	N	d			Stud	Hexagon
15	1/2	10	3	60.3	4	16	1/2–13UNC	M14×2	55	50
20	3/4	11	3	69.9	4	16	1/2–13UNC	M14×2	65	50
25	1	13	3	79.4	4	16	1/2–13UNC	M14×2	65	55
(32)	(1 1/4)	14	5	88.9	4	16	1/2–13UNC	M14×2	70	55
40	1 1/2	16	6	98.4	4	16	1/2–13UNC	M14×2	70	65
50	2	17	8	120.7	4	19	5/8–11UNC	M16×2	80	70
65	2 1/2	19	8	139.7	4	19	5/8–11UNC	M16×2	90	75
80	3	21	10	152.4	4	19	5/8–11UNC	M16×2	90	75
(90)	(3 1/2)	—	10	177.8	8	19	5/8–11UNC	M16×2	90	75
100	4	—	11	190.5	8	19	5/8–11UNC	M16×2	90	75
(125)	(5)	—	11	215.9	8	22	3/4–10UNC	M20×2.5	95	85
150	6	—	13	241.3	8	22	3/4–10UNC	M20×2.5	100	85
200	8	—	13	298.5	8	22	3/4–10UNC	M20×2.5	110	90
250	10	—	13	362.0	12	26	7/8–9UNC	M24×3	115	100
300	12	—	13	431.8	12	26	7/8–9UNC	M24×3	120	100
350	14	—	13	476.3	12	29	1–8UNC	M27×3	135	115
400	16	—	13	539.8	16	29	1–8UNC	M27×3	135	115
450	18	—	13	577.9	16	32	1 1/8–8UN	M30×3	145	125
500	20	—	13	635.0	20	32	1 1/8–8UN	M30×3	160	140
600	24	—	13	749.3	20	35	1 1/4–8UN	M33×3	170	155

* This table is same dimension shown in JPI-7S-15-2011 "Pipe flanges for the Petroleum Industry" Appendix 2
* The flange nominal diameter in ( ) should not be used as much as possible.

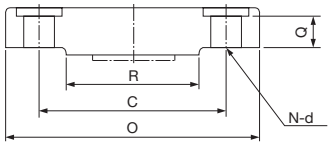
Welding neck



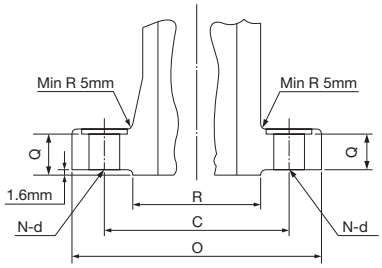
Slip-on welding



Blind



Integral



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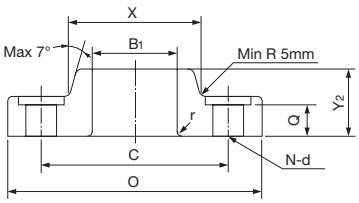
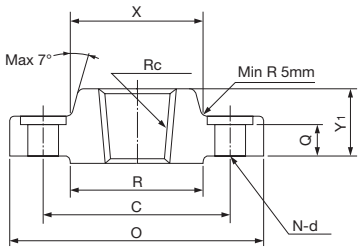
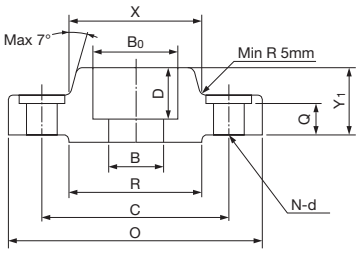


Threaded
Applicable NPS : 15A ~ 150A (1/2 B ~ 6B)



Socket welding
Applicable NPS : 15A ~ 80A (1/2 B ~ 3B)



JPI pipe flange dimension table

c. Class 300 Flange dimension (Raised face)

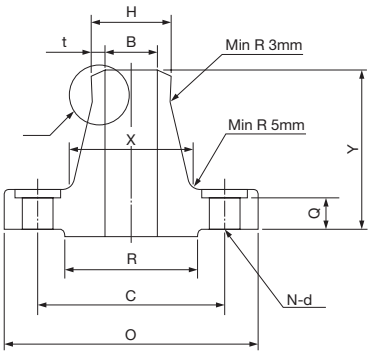
(Unit: mm)

Nominal diameter		Outer diameter	Inner diameter			Hub diameter	Hub tip diameter	Dia. of the RF diameter	Thickness (min)		Total length		
			Slip-on type, socket weld type	Butt welding type, socket weld type	Lap joint type				Other than lap joint	Lap joint	Slip on type, socket weld type, screwed type	Lap joint	Butt weld type
A	B	O	B_0	B	B_1	X	H	R	Q		Y_1	Y_2	Y
15	1/2	95	22.2	16.1	23.4	38	21.7	34.9	12.7	14.3	21	22	51
20	3/4	115	27.7	21.4	28.9	48	27.2	42.9	14.3	15.9	24	25	56
25	1	125	34.5	27.2	35.6	54	34.0	50.8	15.9	17.5	25	27	60
(32)	(1 1/4)	135	43.2	35.5	44.3	64	42.7	63.5	17.5	19.1	25	27	64
40	1 1/2	155	49.1	41.2	50.4	70	48.6	73.0	19.1	20.7	29	30	67
50	2	165	61.1	52.7	62.7	84	60.5	92.1	20.7	22.3	32	33	68
65	2 1/2	190	77.1	65.9	78.7	100	76.3	104.8	23.9	25.4	37	38	75
80	3	210	90.0	78.1	91.6	117	89.1	127.0	27.0	28.6	41	43	78
(90)	(3 1/2)	230	102.6	90.2	104.1	133	101.6	139.7	28.6	30.2	43	44	79
100	4	255	115.4	102.3	116.9	146	114.3	157.2	30.2	31.8	46	48	84
(125)	(5)	280	141.2	126.6	143.0	178	139.8	185.7	33.4	35.0	49	51	97
150	6	320	166.6	151.0	168.4	206	165.2	215.9	35.0	36.6	51	52	97
200	8	380	218.0	199.9	219.5	260	216.3	269.9	39.7	41.3	60	62	110
250	10	445	269.5	248.8	271.7	321	267.4	323.8	46.1	47.7	65	95	116
300	12	520	321.0	297.9	322.8	375	318.5	381.0	49.3	50.8	71	102	129
350	14	585	358.1	As specified	360.2	425	355.6	412.8	52.4	54.0	75	111	141
400	16	650	409.0		411.2	483	406.4	469.9	55.6	57.2	81	121	144
450	18	710	460.0		462.3	533	457.2	533.4	58.6	60.4	87	130	157
500	20	775	511.0		514.4	587	508.0	584.2	62.0	63.5	94	140	160
600	24	915	613.0		616.0	702	609.6	692.2	68.3	69.9	105	152	167

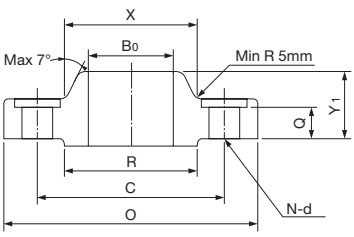
Nominal diameter		Depth of socket	Corner radius	Bolt hole			Screw bolt		Bolt length	
				BCD	Bolt no.	Hole diameter	Unified	Metric	(Reference)	
A	B	D	R	C	N	d			Stud	Hexagon
15	1/2	10	3	66.7	4	16	1/2–13UNC	M14×2	65	55
20	3/4	11	3	82.6	4	19	5/8–11UNC	M16×2	75	65
25	1	13	3	88.9	4	19	5/8–11UNC	M16×2	75	65
(32)	(1 1/4)	14	5	98.4	4	19	5/8–11UNC	M16×2	85	70
40	1 1/2	16	6	114.3	4	22	3/4–10UNC	M20×2.5	90	75
50	2	17	8	127.0	8	19	5/8–11UNC	M16×2	90	75
65	2 1/2	19	8	149.2	8	22	3/4–10UNC	M20×2.5	100	85
80	3	21	10	168.3	8	22	3/4–10UNC	M20×2.5	110	90
(90)	(3 1/2)	—	10	184.2	8	22	3/4–10UNC	M20×2.5	110	95
100	4	—	11	200.0	8	22	3/4–10UNC	M20×2.5	115	95
(125)	(5)	—	11	235.0	8	22	3/4–10UNC	M20×2.5	120	110
150	6	—	13	269.9	12	22	3/4–10UNC	M20×2.5	120	110
200	8	—	13	330.2	12	26	7/8–9UNC	M24×3	140	120
250	10	—	13	387.4	16	29	1–8UNC	M27×3	160	140
300	12	—	13	450.8	16	32	1 1/8–8UN	M30×3	170	145
350	14	—	13	514.4	20	32	1 1/8–8UN	M30×3	180	160
400	16	—	13	571.5	20	35	1 1/4–8UN	M33×3	190	165
450	18	—	13	628.6	24	35	1 1/4–8UN	M33×3	195	170
500	20	—	13	685.8	24	35	1 1/4–8UN	M33×3	205	185
600	24	—	13	812.8	24	42	1 1/2–8UN	M39×3	230	205

* This table is same dimension shown in JPI-7S-15-2011 "Pipe flanges for the Petroleum Industry" Appendix 3
* The flange nominal diameter in ( ) should not be used as much as possible.

Welding neck



Slip-on welding



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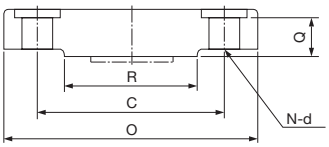
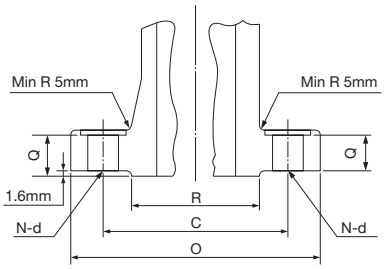


Integral



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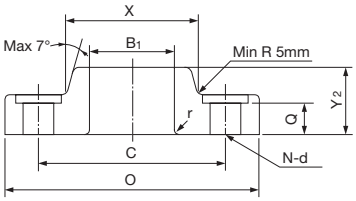
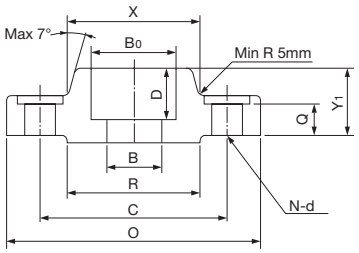


Socket welding
Applicable NPS : 15A ~ 80A (1/2B ~ 3B)



JPI pipe flange dimension table

d. Class 400 Flange dimension (raised face)

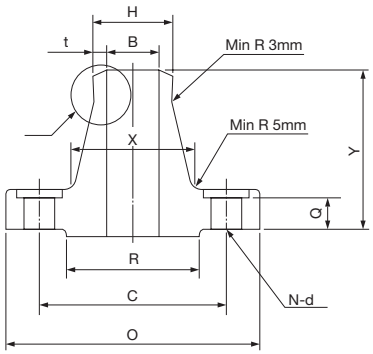
(Unit: mm)

Nominal diameter		Outer diameter	Inner diameter			Hub diameter	Hub tip diameter	Dia. of the RF diameter	Thickness (min)	Total length		
			Slip-on type, socket weld type	Butt welding type, socket weld type	Lap joint type					Slip on type, socket weld type, screwed type	Lap joint	Butt weld type
A	B	O	B_0	B	B_1	X	H	R	Q	Y_1	Y_2	Y
15	1/2	This size is followed by flange dimension Class 600 (PN 110)										
20	3/4											
25	1											
(32)	(1 1/4)											
40	1 1/2											
50	2											
65	2 1/2											
80	3											
(90)	(3 1/2)											
100	4	255	115.4	As specified	116.9	146	114.3	157.2	35.0	51	51	89
(125)	(5)	280	141.2		143.0	178	139.8	185.7	38.1	54	54	102
150	6	320	166.6		168.4	206	165.2	215.9	41.3	57	57	103
200	8	380	218.0		219.5	260	216.3	269.9	47.7	68	68	117
250	10	445	269.5		271.7	321	267.4	323.8	54.0	73	102	124
300	12	520	321.0		322.8	375	318.5	381.0	57.2	79	108	137
350	14	585	358.1		360.2	425	355.6	412.8	60.4	84	117	149
400	16	650	409.0		411.2	483	406.4	469.9	63.5	94	127	152
450	18	710	460.0		462.3	533	457.2	533.4	66.7	98	137	165
500	20	775	511.0		514.4	587	508.0	584.2	69.9	102	146	168
600	24	915	613.0		616.0	702	609.6	692.2	76.2	114	159	175

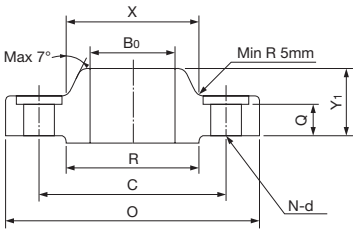
Nominal diameter		Depth of socket	Corner radius	Bolt hole			Screw bolt		Bolt length (Reference)
				BCD	Bolt no.	Hole diameter	Unified	Metric	
A	B	D	R	C	N	d			
15	1/2	This size is followed by flange dimension Class 600 (PN 110)							
20	3/4								
25	1								
(32)	(1 1/4)								
40	1 1/2								
50	2								
65	2 1/2								
80	3								
(90)	(3 1/2)								
100	4	—	11	200.0	8	26	7/8–9UNC	M24×3	140
(125)	(5)	—	11	235.0	8	26	7/8–9UNC	M24×3	145
150	6	—	13	269.9	12	26	7/8–9UNC	M24×3	150
200	8	—	13	330.2	12	29	1–8UNC	M27×3	170
250	10	—	13	387.4	16	32	1 1/8–8UN	M30×3	190
300	12	—	13	450.8	16	35	1 1/4–8UN	M33×3	205
350	14	—	13	514.4	20	35	1 1/4–8UN	M33×3	210
400	16	—	13	571.5	20	39	1 3/8–8UN	M36×3	220
450	18	—	13	628.6	24	39	1 3/8–8UN	M36×3	230
500	20	—	13	685.8	24	42	1 1/2–8UN	M39×3	240
600	24	—	13	812.8	24	48	1 3/4–8UN	M45×3	265

* This table is same dimension shown in JPI-7S-15-2011 "Pipe flanges for the Petroleum Industry" Appendix 4
* The flange nominal diameter in ( ) should not be used as much as possible.

Welding neck



Slip-on welding



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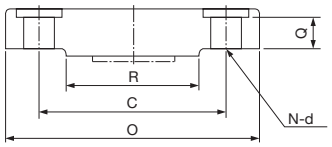
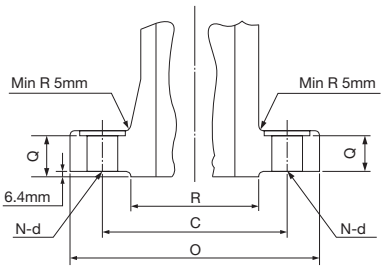


Integral



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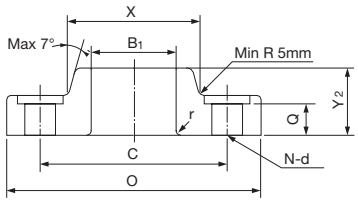
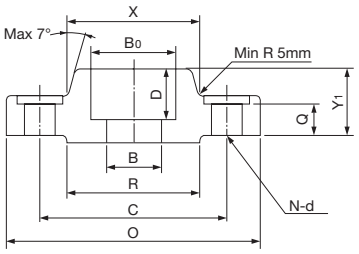


Socket welding
Applicable NPS : 15A ~ 80A (½B ~ 3B)



JPI pipe flange dimension table

e. Class 600 Flange dimension (raised face)

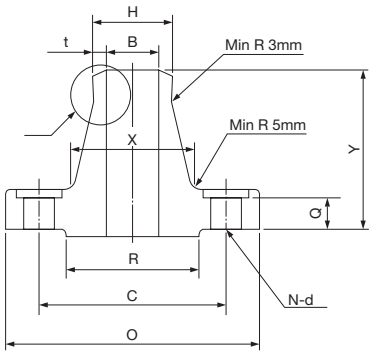
(Unit: mm)

Nominal diameter		Outer diameter	Inner diameter			Hub diameter	Hub tip diameter	Dia. of the RF diameter	Thickness (min)	Total length		
			Slip-on type, socket weld type	Butt welding type, socket weld type	Lap joint type					Slip on type, socket weld type, screwed type	Lap joint	Butt weld type
A	B	O	B_0	B	B_1	X	H	R	Q	Y_1	Y_2	Y
15	1/2	95	22.2	As specified	23.4	38	21.7	34.9	14.3	22	22	52
20	3/4	115	27.7		28.9	48	27.2	42.9	15.9	25	25	57
25	1	125	34.5		35.6	54	34.0	50.8	17.5	27	27	62
(32)	(1 1/4)	135	43.2		44.3	64	42.7	63.5	20.7	29	29	67
40	1 1/2	155	49.1		50.4	70	48.6	73.0	22.3	32	32	70
50	2	165	61.1		62.7	84	60.5	92.1	25.4	37	37	73
65	2 1/2	190	77.1		78.7	100	76.3	104.8	28.6	41	41	79
80	3	210	90.0		91.6	117	89.1	127.0	31.8	46	46	83
(90)	(3 1/2)	230	102.6		104.1	133	101.6	139.7	35.0	49	49	86
100	4	275	115.4		116.9	152	114.3	157.2	38.1	54	54	102
(125)	(5)	330	141.2		143.0	189	139.8	185.7	44.5	60	60	114
150	6	355	166.6		168.4	222	165.2	215.9	47.7	67	67	117
200	8	420	218.0		219.5	273	216.3	269.9	55.6	76	76	133
250	10	510	269.5		271.7	343	267.4	323.8	63.5	86	111	152
300	12	560	321.0		322.8	400	318.5	381.0	66.7	92	117	156
350	14	605	358.1		360.2	432	355.6	412.8	69.9	94	127	165
400	16	685	409.0		411.2	495	406.4	469.9	76.2	106	140	178
450	18	745	460.0		462.3	546	457.2	533.4	82.6	117	152	184
500	20	815	511.0		514.4	610	508.0	584.2	88.9	127	165	190
600	24	940	613.0		616.0	718	609.6	692.2	101.6	140	184	203

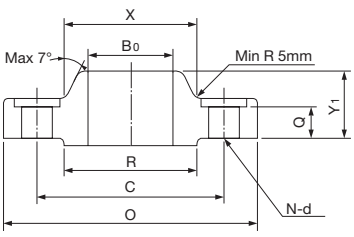
Nominal diameter		Depth of socket	Corner radius	Bolt hole			Screw bolt		Bolt length (Reference)
				BCD	Bolt no.	Hole diameter	Unified	Metric	
A	B	D	R	C	N	d			
15	1/2	10	3	66.7	4	16	1/2–13UNC	M14×2	75
20	3/4	11	3	82.6	4	19	5/8–11UNC	M16×2	90
25	1	13	3	88.9	4	19	5/8–11UNC	M16×2	90
(32)	(1 1/4)	14	5	98.4	4	19	5/8–11UNC	M16×2	95
40	1 1/2	16	6	114.3	4	22	3/4–10UNC	M20×2.5	110
50	2	17	8	127.0	8	19	5/8–11UNC	M16×2	110
65	2 1/2	19	8	149.2	8	22	3/4–10UNC	M20×2.5	120
80	3	21	10	168.3	8	22	3/4–10UNC	M20×2.5	125
(90)	(3 1/2)	—	10	184.2	8	26	7/8–9UNC	M24×3	140
100	4	—	11	215.9	8	26	7/8–9UNC	M24×3	145
(125)	(5)	—	11	266.7	8	29	1–8UNC	M27×3	165
150	6	—	13	292.1	12	29	1–8UNC	M27×3	170
200	8	—	13	349.2	12	32	1 1/8–8UN	M30×3	190
250	10	—	13	431.8	16	35	1 1/4–8UN	M33×3	215
300	12	—	13	489.0	20	35	1 1/4–8UN	M33×3	220
350	14	—	13	527.0	20	39	1 3/8–8UN	M36×3	235
400	16	—	13	603.2	20	42	1 1/2–8UN	M39×3	255
450	18	—	13	654.0	20	45	1 5/8–8UN	M42×3	275
500	20	—	13	723.9	24	45	1 5/8–8UN	M42×3	285
600	24	—	13	838.2	24	51	1 7/8–8UN	M48×3	330

* This table is same dimension shown in JPI-7S-15-2011 "Pipe flanges for the Petroleum Industry" Appendix 5
* The flange nominal diameter in ( ) should not be used as much as possible.

Welding neck



Slip-on welding



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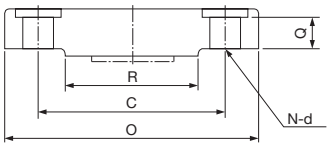
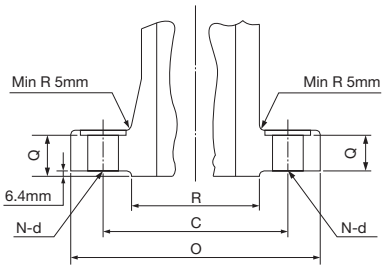


Integral



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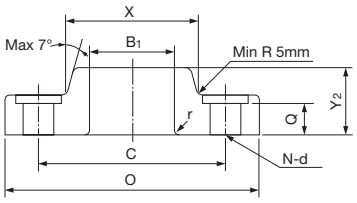
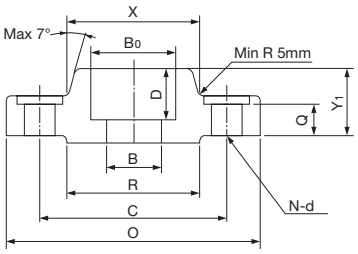


Socket welding
Applicable NPS : 15A ~ 80A (½B ~ 3B)



JPI pipe flange dimension table

f. Class 900 Flange dimension (raised face)

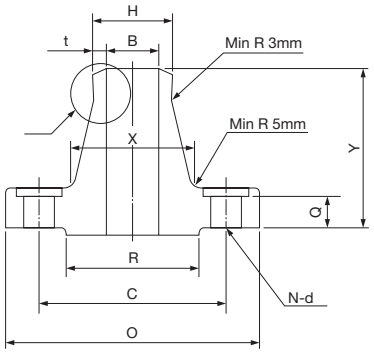
(Unit: mm)

Nominal diameter		Outer diameter	Inner diameter		Hub diameter	Hub tip diameter	Dia. of the RF diameter	Thickness (min)	Total length	
			Slip on type	Welding neck					Slip on type	Welding neck
A	B	O	B_0	B	X	H	R	Q	Y_1	Y
15	1/2	This size is followed by flange dimension Class 1500 (PN 260)								
20	3/4									
25	1									
(32)	(1 1/4)									
40	1 1/2									
50	2									
65	2 1/2									
80	3	240	90.0	As specified	127	89.1	127.0	38.1	54	102
100	4	290	115.4		159	114.3	157.2	44.5	70	114
(125)	(5)	350	141.2		190	139.8	185.7	50.8	79	127
150	6	380	166.6		235	165.2	215.9	55.6	86	140
200	8	470	218.0		298	216.3	269.9	63.5	102	162
250	10	545	269.5		368	267.4	323.8	69.9	108	184
300	12	610	321.0		419	318.5	381.0	79.4	117	200
350	14	640	358.1		451	355.6	412.8	85.8	130	213
400	16	705	409.0		508	406.4	469.9	88.9	133	216
450	18	785	460.0		565	457.2	533.4	101.6	152	229
500	20	855	511.0		622	508.0	584.2	108.0	159	248
600	24	1040	613.0		749	609.6	692.2	139.7	203	292

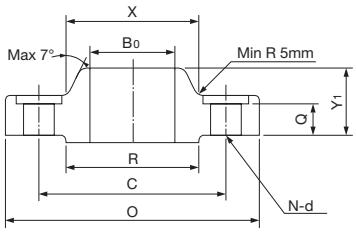
Nominal diameter		Depth of socket	Bolt hole			Screw bolt		Stud Bolt length (reference)
			BCD	Bolt no.	Hole diameter	Unified	Metric	
A	B	D	C	N	d			
15	1/2	This size is followed by flange dimension Class 1500 (PN 260)						
20	3/4							
25	1							
(32)	(1 1/4)							
40	1 1/2							
50	2							
65	2 1/2							
80	3	—	190.5	8	26	7/8–9UNC	M24×3	145
100	4	—	235.0	8	32	1 1/8–8UN	M30×3	170
(125)	(5)	—	279.4	8	35	1 1/4–8UN	M33×3	190
150	6	—	317.5	12	32	1 1/8–8UN	M30×3	190
200	8	—	393.7	12	39	1 3/8–8UN	M36×3	220
250	10	—	469.9	16	39	1 3/8–8UN	M36×3	235
300	12	—	533.4	20	39	1 3/8–8UN	M36×3	255
350	14	—	558.8	20	42	1 1/2–8UN	M39×3	275
400	16	—	616.0	20	45	1 5/8–8UN	M42×3	285
450	18	—	685.8	20	51	1 7/8–8UN	M48×3	325
500	20	—	749.3	20	54	2–8UN	M52×3	350
600	24	—	901.7	20	67	2 1/2–8UN	M64×3	440

* This table is same dimension shown in JPI-7S-15-2011 "Pipe flanges for the Petroleum Industry" Appendix 6
* The flange nominal diameter in ( ) should not be used as much as possible.

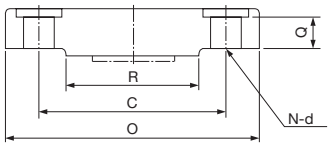
Welding neck



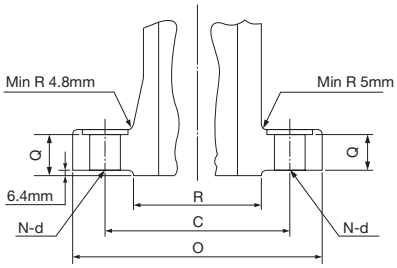
Slip-on welding



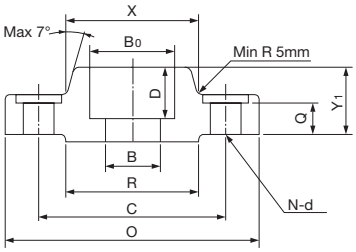
Blind



Integral



Socket welding
Applicable NPS : 15A ~ 65A (1/2B ~ 2 1/2B)



JPI pipe flange dimension table

g. Class 900 Flange dimension (Raised face)

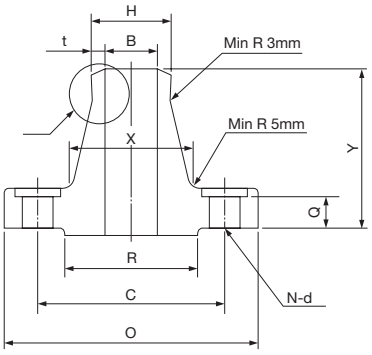
(Unit: mm)

Nominal diameter		Outer diameter	Inner diameter		Hub diameter	Hub tip diameter	Dia. of the RF diameter	Thickness (min)	Total length	
			Slip on type	Welding neck					Slip on type	Welding neck
A	B	O	B_0	B	X	H	R	Q	Y_1	Y
15	1/2	120	22.2	As specified	38	21.7	34.9	22.3	32	60
20	3/4	130	27.7		44	27.2	42.9	25.4	35	70
25	1	150	34.5		52	34.0	50.8	28.6	41	73
(32)	(1 1/4)	160	43.2		64	42.7	63.5	28.6	41	73
40	1 1/2	180	49.1		70	48.6	73.0	31.8	44	83
50	2	215	61.1		105	60.5	92.1	38.1	57	102
65	2 1/2	245	77.1		124	76.3	104.8	41.3	64	105
80	3	265	—		133	89.1	127.0	47.7	—	117
100	4	310	—		162	114.3	157.2	54.0	—	124
(125)	(5)	375	—		197	139.8	185.7	73.1	—	156
150	6	395	—		229	165.2	215.9	82.6	—	171
200	8	485	—		292	216.3	269.9	92.1	—	213
250	10	585	—		368	267.4	323.8	108.0	—	254
300	12	675	—		451	318.5	381.0	123.9	—	283
350	14	750	—		495	355.6	412.8	133.4	—	298
400	16	825	—		552	406.4	469.9	146.1	—	311
450	18	915	—		597	457.2	533.4	162.0	—	327
500	20	985	—		641	508.0	584.2	177.8	—	356
600	24	1170	—		762	609.6	203.2	203.2	—	406

Nominal diameter		Depth of socket	Bolt hole			Screw bolt		Stud Bolt length (reference)
			BCD	Bolt no.	Hole diameter	Unified	Metric	
A	B	D	C	N	d			
15	1/2	10	82.6	4	22	3/4–10UNC	M20×2.5	110
20	3/4	11	88.9	4	22	3/4–10UNC	M20×2.5	115
25	1	13	101.6	4	26	7/8–9UNC	M24×3	125
(32)	(1 1/4)	14	111.1	4	26	7/8–9UNC	M24×3	125
40	1 1/2	16	123.8	4	29	1–8UNC	M27×3	140
50	2	17	165.1	8	26	7/8–9UNC	M24×3	145
65	2 1/2	19	190.5	8	29	1–8UNC	M27×3	160
80	3	—	203.2	8	32	1 1/8–8UN	M30×3	180
100	4	—	241.3	8	35	1 1/4–8UN	M33×3	195
(125)	(5)	—	292.1	8	42	1 1/2–8UN	M39×3	250
150	6	—	317.5	12	39	1 3/8–8UN	M36×3	260
200	8	—	393.7	12	45	1 5/8–8UN	M42×3	290
250	10	—	482.6	12	51	1 7/8–8UN	M48×3	335
300	12	—	571.5	16	54	2–8UN	M52×3	375
350	14	—	635.0	16	60	2 1/4–8UN	M56×3	405
400	16	—	704.8	16	67	2 1/4–8UN	M64×3	445
450	18	—	774.7	16	74	2 3/4–8UN	M70×3	495
500	20	—	831.8	16	80	3–8UN	M76×3	540
600	24	—	990.6	16	93	3 1/2–8UN	M90×3	615

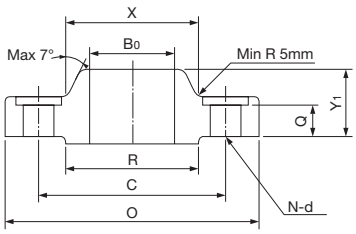
* This table is same dimension shown in JPI-7S-15-2011 "Pipe flanges for the Petroleum Industry" Appendix 7
* The flange nominal diameter in ( ) should not be used as much as possible.

Welding neck



Slip-on welding

Applicable NPS : 15A ~ 65A (1/2B ~ 2 1/2B)



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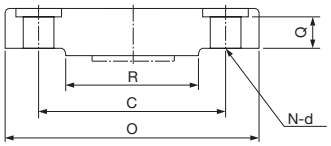
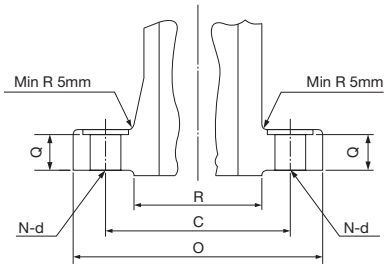
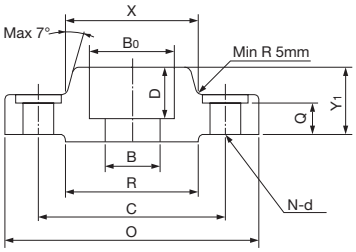


Integral



Socket welding

Applicable NPS : 15A ~ 65A (1/2B ~ 2 1/2B)



JPI pipe flange dimension table

h. Class 2500 Flange dimension (raised face)

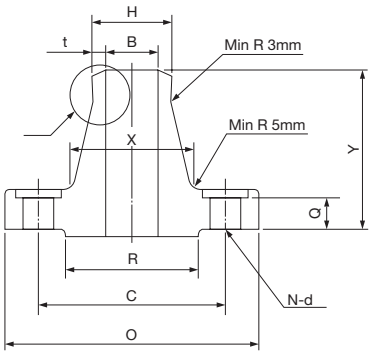
(Unit: mm)

Nominal diameter		Outer diameter	Inner diameter	Hub diameter	Hub tip diameter	Dia. of the RF diameter	Thickness (min)	Total length
			Welding neck					Welding neck
A	B	O	B	X	H	R	Q	Y
15	1/2	135	As specified	43	21.7	34.9	30.2	73
20	3/4	140		51	27.2	42.9	31.8	79
25	1	160		57	34.0	50.8	35.0	89
(32)	(1 1/4)	185		73	42.7	63.5	38.1	95
40	1 1/2	205		79	48.6	73.0	44.5	111
50	2	235		95	60.5	92.1	50.9	127
65	2 1/2	265		114	76.3	104.8	57.2	143
80	3	305		133	89.1	127.0	66.7	168
100	4	355		165	114.3	157.2	76.2	190
(125)	(5)	420		203	139.8	185.7	92.1	229
150	6	485		235	165.2	215.9	108.0	273
200	8	550		305	216.3	269.9	127.0	318
250	10	675		375	267.4	323.8	165.1	419
300	12	760		441	318.5	381.0	184.2	464

Nominal diameter		Bolt hole			Screw bolt		Stud Bolt length (reference)
		BCD	Bolt no.	Hole diameter	Unified	Metric	
A	B	C	N	d			
15	1/2	88.9	4	22	3/4–10UNC	M20×2.5	120
20	3/4	95.2	4	22	3/4–10UNC	M20×2.5	125
25	1	108.0	4	26	7/8–9UNC	M24×3	140
(32)	(1 1/4)	130.2	4	29	1–8UNC	M27×3	150
40	1 1/2	146.0	4	32	1 1/8–8UN	M30×3	170
50	2	171.4	8	29	1–8UNC	M27×3	180
65	2 1/2	196.8	8	32	1 1/8–8UN	M30×3	195
80	3	228.6	8	35	1 1/4–8UN	M33×3	220
100	4	273.0	8	42	1 1/2–8UN	M39×3	255
(125)	(5)	323.8	8	48	1 3/4–8UN	M45×3	300
150	6	368.3	8	54	2–8UN	M52×3	345
200	8	438.2	12	54	2–8UN	M52×3	380
250	10	539.8	12	67	2 1/2–8UN	M64×3	490
300	12	619.1	12	74	2 3/4–8UN	M70×3	540

* This table is same dimension shown in JPI-7S-15-2011 "Pipe flanges for the Petroleum Industry" Appendix 8
* The flange nominal diameter in ( ) should not be used as much as possible.

Welding neck



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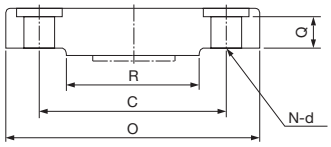
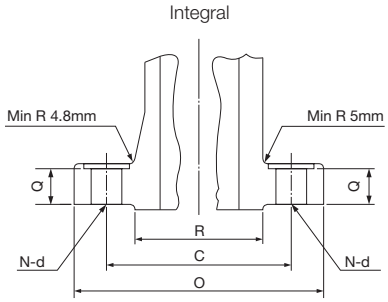


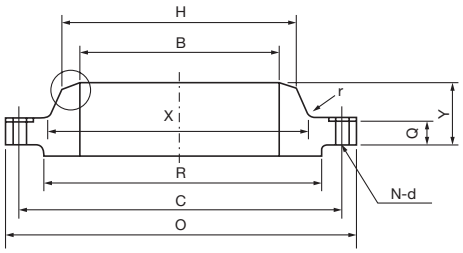
Integral



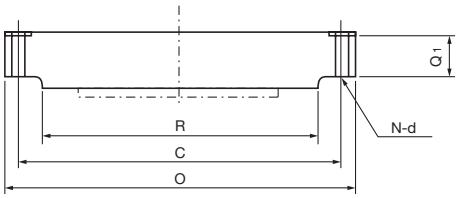
JPI pipe flange dimension table

Series A Class 150 ~ 900 (PN10 ~ 150) raised face

Welding neck



Blind



i. Series A Class 150 (PN 20) Flange dimension Table (Raised face)

(Unit: mm)

Nominal diameter		Outer diameter	Inner diameter	Hub diameter	Hub tip diameter	Dia. of the RF diameter	Thickness (min)		Total length
							Butt weld type	Blind	
A	B	O	B	X	H	R	Q	Q_1	Y
650	26	870	As specified	676	660.4	749	66.7	66.7	119
700	28	925		727	711.2	800	69.9	69.9	124
750	30	985		781	762.0	857	73.1	73.1	135
800	32	1060		832	812.8	914	79.4	79.4	143
850	34	1110		883	863.6	965	81.0	81.0	148
900	36	1170		933	914.4	1022	88.9	88.9	156
950	38	1240		991	965.2	1073	85.8	85.8	156
1000	40	1290		1041	1016.0	1124	88.9	88.9	162
1050	42	1345		1092	1066.8	1194	95.3	95.3	170
1100	44	1405		1143	1117.6	1245	100.1	100.1	176
1150	46	1455		1197	1168.4	1295	101.6	101.6	184
1200	48	1510		1248	1219.2	1359	106.4	106.4	191
(1250)	(50)	1570		1302	1270.0	1410	109.6	109.6	202
(1300)	(52)	1625		1353	1320.8	1461	114.3	114.3	208
1350	54	1685		1403	1371.6	1511	119.1	119.1	214
(1400)	(56)	1745		1457	1422.4	1575	122.3	122.3	227
(1450)	(58)	1805		1508	1473.2	1626	127.0	127.0	233
1500	60	1855		1559	1524.0	1676	130.2	130.2	238

Nominal diameter		Corner radius	Bolt hole			Screw bolt		Bolt length (reference)	
			BCD	Bolt no.	Hole diameter	Unified	Metric	Hexagon	Stud
A	B	r	C	N	d				
650	26	10	806.4	24	35	$1\frac{1}{4}$–8UN	M33×3	200	220
700	28	11	863.6	28	35	$1\frac{1}{4}$–8UN	M33×3	205	225
750	30	11	914.4	28	35	$1\frac{1}{4}$–8UN	M33×3	210	235
800	32	11	977.9	28	42	$1\frac{1}{2}$–8UN	M39×3	235	265
850	34	13	1028.7	32	42	$1\frac{1}{2}$–8UN	M39×3	235	265
900	36	13	1085.8	32	42	$1\frac{1}{2}$–8UN	M39×3	250	280
950	38	13	1149.4	32	42	$1\frac{1}{2}$–8UN	M39×3	245	275
1000	40	13	1200.2	36	42	$1\frac{1}{2}$–8UN	M39×3	250	280
1050	42	13	1257.3	36	42	$1\frac{1}{2}$–8UN	M39×3	265	295
1100	44	13	1314.4	40	42	$1\frac{1}{2}$–8UN	M39×3	275	305
1150	46	13	1365.2	40	42	$1\frac{1}{2}$–8UN	M39×3	280	310
1200	48	13	1422.4	44	42	$1\frac{1}{2}$–8UN	M39×3	285	320
(1250)	(50)	13	1479.6	44	48	$1\frac{3}{4}$–8UN	M45×3	300	340
(1300)	(52)	13	1536.7	44	48	$1\frac{3}{4}$–8UN	M45×3	310	345
1350	54	13	1593.8	44	48	$1\frac{3}{4}$–8UN	M45×3	320	355
(1400)	(56)	13	1651.0	48	48	$1\frac{3}{4}$–8UN	M45×3	325	365
(1450)	(58)	13	1708.2	48	48	$1\frac{3}{4}$–8UN	M45×3	335	375
1500	60	13	1759.0	52	48	$1\frac{3}{4}$–8UN	M45×3	340	380

* This Table is same as the dimension shown in JPI-7S-43-2008 "Large diameter Carbon steel flanges for the Petroleum industry" Appendix 1.
* The flange nominal diameter in ( ) should not be used as much as possible.

JPI pipe flange dimension table

j. Series A Class 300 (PN 50) Flange dimension Table (raised face)

(Unit: mm)

Nominal diameter		Outer diameter	Inner diameter	Hub diameter	Hub tip diameter	Dia. of the RF diameter	Thickness (min)		Total length
							Butt weld type	Blind	
A	B	O	B	X	H	R	Q	Q_1	Y
650	26	970	As specified	721	660.4	749	77.8	82.6	183
700	28	1035		775	711.2	800	84.2	88.9	195
750	30	1090		827	762.0	857	90.5	93.7	208
800	32	1150		881	812.8	914	96.9	98.5	221
850	34	1205		937	863.6	965	100.1	103.2	230
900	36	1270		991	914.4	1022	103.2	109.6	240
950	38	1170		994	965.2	1029	106.4	106.4	179
1000	40	1240		1048	1016.0	1086	112.8	112.8	192
1050	42	1290		1099	1066.8	1137	117.5	117.5	198
1100	44	1355		1149	1117.6	1194	122.3	122.3	205
1150	46	1415		1203	1168.4	1245	127.0	127.0	214
1200	48	1465		1254	1219.2	1302	131.8	131.8	222
(1250)	(50)	1530		1305	1270.0	1359	138.2	138.2	230
(1300)	(52)	1580		1356	1320.8	1410	142.9	142.9	237
1350	54	1660		1410	1371.6	1467	150.9	150.9	251
(1400)	(56)	1710		1464	1422.4	1518	152.4	152.4	259
(1450)	(58)	1760		1514	1473.2	1575	157.2	157.2	265
1500	60	1810		1565	1524.0	1626	162.0	162.0	271

Nominal diameter		Corner radius	Bolt hole			Screw bolt		Bolt length (reference)	
			BCD	Bolt no.	Hole diameter	Unified	Metric	Hexagon	Stud
A	B	r	C	N	d				
650	26	10	876.3	28	45	$1\frac{5}{8}$–8UN	M42×3	230	265
700	28	11	939.8	28	45	$1\frac{5}{8}$–8UN	M42×3	240	280
750	30	11	997.0	28	48	$1\frac{3}{4}$–8UN	M45×3	255	295
800	32	11	1054.1	28	51	$1\frac{7}{8}$–8UN	M48×3	275	320
850	34	13	1104.9	28	51	$1\frac{7}{8}$–8UN	M48×3	280	325
900	36	13	1168.4	32	54	2–8UN	M52×3	290	335
950	38	13	1092.2	32	42	$1\frac{1}{2}$–8UN	M39×3	280	320
1000	40	13	1155.7	32	45	$1\frac{5}{8}$–8UN	M42×3	300	335
1050	42	13	1206.5	32	45	$1\frac{5}{8}$–8UN	M42×3	310	345
1100	44	13	1263.6	32	48	$1\frac{3}{4}$–8UN	M45×3	320	365
1150	46	13	1320.8	28	51	$1\frac{7}{8}$–8UN	M48×3	335	380
1200	48	13	1371.6	32	51	$1\frac{7}{8}$–8UN	M48×3	345	390
(1250)	(50)	13	1428.8	32	54	2–8UN	M52×3	360	405
(1300)	(52)	13	1479.6	32	54	2–8UN	M52×3	370	415
1350	54	13	1549.4	28	60	$2\frac{1}{4}$–8UN	M56×3	390	445
(1400)	(56)	13	1600.2	28	60	$2\frac{1}{4}$–8UN	M56×3	395	450
(1450)	(58)	13	1651.0	32	60	$2\frac{1}{4}$–8UN	M56×3	405	460
1500	60	13	1701.8	32	60	$2\frac{1}{4}$–8UN	M56×3	415	470

* This Table is same as the dimension shown in JPI-7S-43-2008 "Large diameter Carbon steel flanges for the Petroleum industry" Appendix 2.
* The flange nominal diameter in ( ) should not be used as much as possible.

k. Series A Class 400 (PN 65) Flange dimension Table (raised face)

(Unit: mm)

Nominal diameter		Outer diameter	Inner diameter	Hub diameter	Hub tip diameter	Dia. of the RF diameter	Thickness (min)		Total length
							Butt weld type	Blind	
A	B	O	B	X	H	R	Q	Q_1	Y
650	26	970	As specified	727	660.4	749	88.9	98.5	194
700	28	1035		783	711.2	800	95.3	104.8	206
750	30	1090		837	762.0	857	101.6	111.2	219
800	32	1150		889	812.8	914	108.0	115.9	232
850	34	1205		945	863.6	965	111.2	122.3	241
900	36	1270		1000	914.4	1022	114.3	128.6	251
950	38	1205		1003	965.2	1035	123.9	123.9	206
1000	40	1270		1054	1016.0	1092	130.2	130.2	216
1050	42	1320		1108	1066.8	1143	133.4	133.4	224
1100	44	1385		1159	1117.6	1200	139.7	139.7	233
1150	46	1440		1213	1168.4	1257	146.1	146.1	244
1200	48	1510		1267	1219.2	1308	152.4	152.4	257
(1250)	(50)	1570		1321	1270.0	1362	157.2	158.8	268
(1300)	(52)	1620		1372	1320.8	1413	162.0	163.6	276
1350	54	1700		1426	1371.6	1470	169.9	171.5	289
(1400)	(56)	1755		1480	1422.4	1527	174.7	176.3	298
(1450)	(58)	1805		1530	1473.2	1578	177.8	181.0	306
1500	60	1885		1584	1524.0	1635	185.8	189.0	319

Nominal diameter		Corner radius	Bolt hole			Screw bolt		Stud Bolt length (reference)
			BCD	Bolt no.	Hole diameter	Unified	Metric	
A	B	r	C	N	d			
650	26	11	876.3	28	48	$1\frac{3}{4}$–8UN	M45×3	305
700	28	13	939.8	28	51	$1\frac{7}{8}$–8UN	M48×3	325
750	30	13	997.0	28	54	2–8UN	M52×3	345
800	32	13	1054.1	28	54	2–8UN	M52×3	360
850	34	14	1104.9	28	54	2–8UN	M52×3	365
900	36	14	1168.4	32	54	2–8UN	M52×3	370
950	38	14	1117.6	32	48	$1\frac{3}{4}$–8UN	M45×3	380
1000	40	14	1174.8	32	51	$1\frac{7}{8}$–8UN	M48×3	395
1050	42	14	1225.6	32	51	$1\frac{7}{8}$–8UN	M48×3	405
1100	44	14	1282.7	32	54	2–8UN	M52×3	425
1150	46	14	1339.8	36	54	2–8UN	M52×3	435
1200	48	14	1403.4	28	60	$2\frac{1}{4}$–8UN	M56×3	460
(1250)	(50)	14	1460.5	32	60	$2\frac{1}{4}$–8UN	M56×3	475
(1300)	(52)	14	1511.3	32	60	$2\frac{1}{4}$–8UN	M56×3	485
1350	54	14	1581.2	28	67	$2\frac{1}{4}$–8UN	M64×3	510
(1400)	(56)	14	1632.0	32	67	$2\frac{1}{2}$–8UN	M64×3	520
(1450)	(58)	14	1682.8	32	67	$2\frac{1}{2}$–8UN	M64×3	525
1500	60	14	1752.6	32	74	$2\frac{3}{4}$–8UN	M70×3	555

* This Table is same as the dimension shown in JPI-7S-43-2008 "Large diameter Carbon steel flanges for the Petroleum industry" Appendix 3.
* The flange nominal diameter in ( ) should not be used as much as possible.

JPI pipe flange dimension table

I. Series A Class 600 (PN 110) Flange dimension Table (raised face)

(Unit: mm)

Nominal diameter		Outer diameter	Inner diameter	Hub diameter	Hub tip diameter	Dia. of the RF diameter	Thickness (min)		Total length
							Butt weld type	Blind	
A	B	O	B	X	H	R	Q	Q_1	Y
650	26	1015	As specified	748	660.4	749	108.0	125.5	222
700	28	1075		803	711.2	800	111.2	131.8	235
750	30	1130		862	762.0	857	114.3	139.7	248
800	32	1195		918	812.8	914	117.5	147.7	260
850	34	1245		973	863.6	965	120.7	154.0	270
900	36	1315		1032	914.4	1022	123.9	162.0	283
950	38	1270		1022	965.2	1054	152.4	155.0	254
1000	40	1320		1073	1016.0	1111	158.8	162.0	264
1050	42	1405		1127	1066.8	1168	168.3	171.5	279
1100	44	1455		1181	1117.6	1226	173.1	177.8	289
1150	46	1510		1235	1168.4	1276	179.4	185.8	300
1200	48	1595		1289	1219.2	1334	189.0	195.3	316
(1250)	(50)	1670		1343	1270.0	1384	196.9	203.2	329
(1300)	(52)	1720		1394	1320.8	1435	203.2	209.6	337
1350	54	1780		1448	1371.6	1492	209.6	217.5	349
(1400)	(56)	1855		1502	1422.4	1543	217.5	225.5	362
(1450)	(58)	1905		1553	1473.2	1600	222.3	231.8	370
1500	60	1995		1610	1524.0	1657	233.4	242.9	389

Nominal diameter		Corner radius	Bolt hole			Screw bolt		Stud Bolt length (reference)
			BCD	Bolt no.	Hole diameter	Unified	Metric	
A	B	r	C	N	d			
650	26	13	914.4	28	51	$1\frac{7}{8}$–8UN	M48×3	350
700	28	13	965.2	28	54	2–8UN	M52×3	365
750	30	13	1022.4	28	54	2–8UN	M52×3	370
800	32	13	1079.5	28	60	$2\frac{1}{4}$–8UN	M56×3	390
850	34	14	1130.3	28	60	$2\frac{1}{4}$–8UN	M56×3	400
900	36	14	1193.8	28	67	$2\frac{1}{2}$–8UN	M64×3	415
950	38	14	1162.0	28	60	$2\frac{1}{4}$–8UN	M56×3	460
1000	40	14	1212.8	32	60	$2\frac{1}{4}$–8UN	M56×3	475
1050	42	14	1282.7	28	67	$2\frac{1}{2}$–8UN	M64×3	505
1100	44	14	1333.5	32	67	$2\frac{1}{2}$–8UN	M64×3	515
1150	46	14	1390.6	32	67	$2\frac{1}{2}$–8UN	M64×3	530
1200	48	14	1460.5	32	74	$2\frac{3}{4}$–8UN	M70×3	560
(1250)	(50)	14	1524.0	28	80	3–8UN	M76×3	590
(1300)	(52)	14	1574.8	32	80	3–8UN	M76×3	600
1350	54	14	1632.0	32	80	3–8UN	M76×3	615
(1400)	(56)	16	1695.4	32	86	$3\frac{1}{4}$–8UN	M82×3	640
(1450)	(58)	16	1746.2	32	86	$3\frac{1}{4}$–8UN	M82×3	650
1500	60	17	1822.4	28	93	$3\frac{1}{2}$–8UN	M90×3	685

* This Table is same as the dimension shown in JPI-7S-43-2008 "Large diameter Carbon steel flanges for the Petroleum industry" Appendix 4.
* The flange nominal diameter in ( ) should not be used as much as possible.

m. Series A Class 900 (PN 150) Flange dimension Table (raised face)

(Unit: mm)

Nominal diameter		Outer diameter	Inner diameter	Hub diameter	Hub tip diameter	Dia. of the RF diameter	Thickness (min)		Total length
							Butt weld type	Blind	
A	B	O	B	X	H	R	Q	Q_1	Y
650	26	1085	As specified	775	660.4	749	139.7	160.4	286
700	28	1170		832	711.2	800	142.9	171.5	298
750	30	1230		889	762.0	857	149.3	182.6	311
800	32	1315		946	812.8	914	158.8	193.7	330
850	34	1395		1006	863.6	965	165.1	204.8	349
900	36	1460		1064	914.4	1022	171.5	214.4	362
950	38	1460		1073	965.2	1099	190.5	215.9	352
1000	40	1510		1127	1016.0	1162	196.9	223.9	364
1050	42	1560		1176	1066.8	1213	206.4	231.8	371
1100	44	1650		1235	1117.6	1270	214.4	242.9	391
1150	46	1735		1292	1168.4	1334	225.5	255.6	411
1200	48	1785		1343	1219.2	1384	233.4	263.6	419

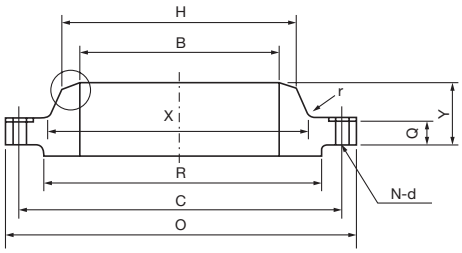
Nominal diameter		Corner radius	Bolt hole			Screw bolt		Stud Bolt length (reference)
			BCD	Bolt no.	Hole diameter	Unified	Metric	
A	B	r	C	N	d			
650	26	11	952.5	20	74	$2\frac{3}{4}$–8UN	M70×3	460
700	28	13	1022.4	20	80	3–8UN	M76×3	480
750	30	13	1085.8	20	80	3–8UN	M76×3	495
800	32	13	1155.7	20	86	$3\frac{1}{4}$–8UN	M82×3	525
850	34	14	1225.6	20	93	$3\frac{1}{2}$–8UN	M90×3	550
900	36	14	1289.0	20	93	$3\frac{1}{2}$–8UN	M90×3	560
950	38	19	1289.0	20	93	$3\frac{1}{2}$–8UN	M90×3	600
1000	40	21	1339.8	24	93	$3\frac{1}{2}$–8UN	M90×3	615
1050	42	21	1390.6	24	93	$3\frac{1}{2}$–8UN	M90×3	630
1100	44	22	1463.7	24	99	$3\frac{3}{4}$–8UN	M95×3	660
1150	46	22	1536.7	24	105	4–8UN	M100×3	695
1200	48	24	1587.5	24	105	4–8UN	M100×3	710

* This Table is same as the dimension shown in JPI-7S-43-2008 "Large diameter Carbon steel flanges for the Petroleum industry" Appendix 5.

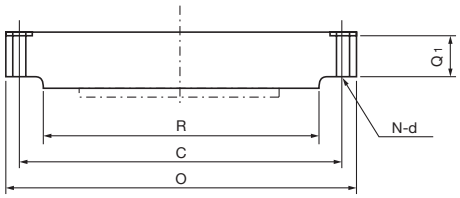
JPI pipe flange dimension table

Series B Class 75 ~ 900 (PN10 ~ 150) raised face

Welding neck



Blind



n. Series B Class 75 (PN 10) Flange dimension Table (Raised face)

(Unit: mm)

Nominal diameter		Outer diameter	Inner diameter	Hub diameter	Hub tip diameter	Dia. of the RF diameter	Thickness (min)		Total length
							Butt weld type	Blind	
A	B	O	B	X	H	R	Q	Q_1	Y
650	26	760	As specified	676	661.9	705	31.9	31.9	57
700	28	815		727	712.7	756	31.9	31.9	60
750	30	865		778	763.5	806	31.9	31.9	64
800	32	915		829	814.3	857	33.5	35.0	68
850	34	965		879	865.1	908	33.5	36.6	72
900	36	1035		935	915.9	965	35.0	40.9	84
950	38	1085		986	966.7	1016	36.6	43.0	87
1000	40	1135		1037	1017.5	1067	36.6	43.0	91
1050	42	1185		1087	1068.3	1118	38.2	46.3	94
1100	44	1250		1140	1119.1	1175	41.4	47.7	103
1150	46	1300		1191	1169.9	1226	43.0	49.3	106
1200	48	1355		1241	1220.7	1276	44.6	52.5	110
(1250)	(50)	1405		1294	1271.5	1327	46.2	54.1	114
(1300)	(52)	1455		1345	1322.3	1378	46.2	55.7	119
1350	54	1510		1397	1373.1	1429	47.8	58.9	124
(1400)	(56)	1575		1451	1423.9	1486	49.3	60.4	133
(1450)	(58)	1625		1502	1474.7	1537	50.9	62.0	137
1500	60	1675		1553	1525.5	1588	54.1	65.2	143

Nominal diameter		Corner radius	Bolt hole			Screw bolt		Bolt length (reference)	
			BCD	Bolt no.	Hole diameter	Unified	Metric	Hexagon	Stud
A	B	r	C	N	d				
650	26	8	723.9	36	19	5/8–11UNC	M16×2	100	115
700	28	8	774.7	40	19	5/8–11UNC	M16×2	100	115
750	30	8	825.5	44	19	5/8–11UNC	M16×2	100	115
800	32	8	876.3	48	19	5/8–11UNC	M16×2	100	115
850	34	8	927.1	52	19	5/8–11UNC	M16×2	100	115
900	36	10	992.2	40	22	3/4–10UNC	M20×2.5	110	125
950	38	10	1043.0	40	22	3/4–10UNC	M20×2.5	115	130
1000	40	10	1093.8	44	22	3/4–10UNC	M20×2.5	115	130
1050	42	10	1144.6	48	22	3/4–10UNC	M20×2.5	115	135
1100	44	10	1203.3	36	26	7/8–9UNC	M24×3	125	145
1150	46	10	1254.1	40	26	7/8–9UNC	M24×3	130	150
1200	48	10	1304.9	44	26	7/8–9UNC	M24×3	130	150
(1250)	(50)	10	1355.7	44	26	7/8–9UNC	M24×3	135	155
(1300)	(52)	10	1409.7	48	26	7/8–9UNC	M24×3	135	155
1350	54	10	1460.5	48	26	7/8–9UNC	M24×3	140	160
(1400)	(56)	11	1520.8	40	29	1–8UNC	M27×3	150	175
(1450)	(58)	11	1571.6	44	29	1–8UNC	M27×3	155	175
1500	60	11	1622.4	44	29	1—8UNC	M27×3	160	185

* This Table is same as the dimension shown in JPI-7S-43-2008 "Large diameter Carbon steel flanges for the Petroleum industry" Appendix 10.

JPI pipe flange dimension table

o. Series B Class 150 (PN 20) Flange dimension Table (raised face)

(Unit: mm)

Nominal diameter		Outer diameter	Inner diameter	Hub diameter	Hub tip diameter	Dia. of the RF diameter	Thickness (min)		Total length
							Butt weld type	Blind	
A	B	O	B	X	H	R	Q	Q_1	Y
650	26	785	As specified	684	661.9	711	39.8	43.0	87
700	28	835		735	712.7	762	43.0	46.2	94
750	30	885		787	763.5	813	43.0	49.3	98
800	32	940		840	814.3	864	44.6	52.5	106
850	34	1005		892	865.1	921	47.7	55.7	109
900	36	1055		945	915.9	972	50.9	57.3	116
950	38	1125		997	968.2	1022	52.5	62.0	122
1000	40	1175		1049	1019.0	1080	54.1	65.2	127
1050	42	1225		1102	1069.8	1130	57.3	66.8	132
1100	44	1275		1153	1120.6	1181	58.9	70.0	135
1150	46	1340		1205	1171.4	1235	60.4	73.1	143
1200	48	1390		1257	1222.2	1289	63.6	76.3	148
(1250)	(50)	1445		1308	1273.0	1340	66.8	79.5	152
(1300)	(52)	1495		1360	1323.8	1391	68.4	82.7	156
1350	54	1550		1413	1374.6	1441	70.0	85.8	160
(1400)	(56)	1600		1465	1425.4	1492	71.6	89.0	165
(1450)	(58)	1675		1516	1476.2	1543	73.1	91.9	173
1500	60	1725		1570	1527.0	1600	74.7	95.4	178

Nominal diameter		Corner radius	Bolt hole			Screw bolt		Bolt length (reference)	
			BCD	Bolt no.	Hole diameter	Unified	Metric	Hexagon	Stud
A	B	r	C	N	d				
650	26	10	744.5	36	22	$^3/_4$–10UNC	M20×2.5	120	135
700	28	10	795.3	40	22	$^3/_4$–10UNC	M20×2.5	125	140
750	30	10	846.1	44	22	$^3/_4$–10UNC	M20×2.5	125	140
800	32	10	900.1	48	22	$^3/_4$–10UNC	M20×2.5	130	145
850	34	10	957.3	40	26	$^7/_8$–9UNC	M24×3	140	160
900	36	10	1009.6	44	26	$^7/_8$–9UNC	M24×3	155	170
950	38	10	1070.0	40	29	1–8UNC	M27×3	160	180
1000	40	10	1120.8	44	29	1–8UNC	M27×3	165	185
1050	42	11	1171.6	48	29	1–8UNC	M27×3	170	190
1100	44	11	1222.4	52	29	1–8UNC	M27×3	175	190
1150	46	11	1284.3	40	32	$1^1/_8$–8UN	M30×3	180	200
1200	48	11	1335.1	44	32	$1^1/_8$–8UN	M30×3	190	210
(1250)	(50)	11	1385.9	48	32	$1^1/_8$–8UN	M30×3	195	215
(1300)	(52)	11	1436.7	52	32	$1^1/_8$–8UN	M30×3	200	220
1350	54	11	1492.2	56	32	$1^1/_8$–8UN	M30×3	200	220
(1400)	(56)	14	1543.0	60	32	$1^1/_8$–8UN	M30×3	205	225
(1450)	(58)	14	1611.3	48	35	$1^1/_4$–8UN	M33×3	210	230
1500	60	14	1662.1	52	35	$1^1/_4$–8UN	M33×3	215	235

* This Table is same as the dimension shown in JPI-7S-43-2008 "Large diameter Carbon steel flanges for the Petroleum industry" Appendix 11.
* The flange nominal diameter in ( ) should not be used as much as possible.

p. Series B Class 300 (PN 50) Flange dimension Table (raised face)

(Unit: mm)

Nominal diameter		Outer diameter	Inner diameter	Hub diameter	Hub tip diameter	Dia. of the RF diameter	Thickness (min)		Total length
							Butt weld type	Blind	
A	B	O	B	X	H	R	Q	Q_1	Y
650	26	865	As specified	702	665.2	737	87.4	87.4	143
700	28	920		756	716.0	787	87.4	87.4	148
750	30	990		813	768.4	845	92.1	92.1	156
800	32	1055		864	819.2	902	101.6	101.6	167
850	34	1110		918	870.0	953	101.6	101.6	171
900	36	1170		965	920.8	1010	101.6	101.6	179
950	38	1220		1016	971.6	1060	109.6	109.6	190
1000	40	1275		1067	1022.4	1114	114.3	114.3	197
1050	42	1335		1118	1074.7	1168	117.5	117.5	203
1100	44	1385		1173	1125.5	1219	125.5	125.5	213
1150	46	1460		1229	1176.3	1270	127.0	128.6	221
1200	48	1510		1278	1227.1	1327	127.0	133.4	222
(1250)	(50)	1560		1330	1277.9	1378	136.6	138.2	233
(1300)	(52)	1615		1383	1328.7	1429	141.3	142.6	241
1350	54	1675		1435	1379.5	1480	135.0	147.7	238
(1400)	(56)	1765		1494	1430.3	1537	152.4	155.4	267
(1450)	(58)	1825		1548	1481.1	1594	152.4	160.4	273
1500	60	1880		1599	1531.9	1651	149.3	165.1	270

Nominal diameter		Corner radius	Bolt hole			Screw bolt		Bolt length (reference)	
			BCD	Bolt no.	Hole diameter	Unified	Metric	Hexagon	Stud
A	B	r	C	N	d				
650	26	14	803.3	32	35	$1\frac{1}{4}$–8UN	M33×3	240	265
700	28	14	857.2	36	35	$1\frac{1}{4}$–8UN	M33×3	240	265
750	30	14	920.8	36	39	$1\frac{3}{8}$–8UN	M36×3	250	280
800	32	16	977.9	32	42	$1\frac{1}{2}$–8UN	M39×3	275	310
850	34	16	1031.9	36	42	$1\frac{1}{2}$–8UN	M39×3	275	310
900	36	16	1089.0	32	45	$1\frac{5}{8}$–8UN	M42×3	275	315
950	38	16	1139.8	36	45	$1\frac{5}{8}$–8UN	M42×3	295	330
1000	40	16	1190.6	40	45	$1\frac{5}{8}$–8UN	M42×3	300	340
1050	42	16	1244.6	36	48	$1\frac{3}{4}$–8UN	M45×3	310	355
1100	44	16	1295.4	40	48	$1\frac{3}{4}$–8UN	M45×3	325	370
1150	46	16	1365.2	36	51	$1\frac{7}{8}$–8UN	M48×3	335	380
1200	48	16	1416.0	40	51	$1\frac{7}{8}$–8UN	M48×3	335	380
(1250)	(50)	16	1466.8	44	51	$1\frac{7}{8}$–8UN	M48×3	335	400
(1300)	(52)	16	1517.6	48	51	$1\frac{7}{8}$–8UN	M48×3	360	405
1350	54	16	1578.0	48	51	$1\frac{7}{8}$–8UN	M48×3	350	395
(1400)	(56)	17	1651.0	36	60	$2\frac{1}{4}$–8UN	M56×3	395	450
(1450)	(58)	17	1712.9	40	60	$2\frac{1}{4}$–8UN	M56×3	395	450
1500	60	17	1763.7	40	60	$2\frac{1}{4}$–8UN	M56×3	390	440

* This Table is same as the dimension shown in JPI-7S-43-2008 "Large diameter Carbon steel flanges for the Petroleum industry" Appendix 12.
* The flange nominal diameter in ( ) should not be used as much as possible.

JPI pipe flange dimension table

q. Series B Class 400 (PN 65) Flange dimension Table (raised face)

(Unit: mm)

Nominal diameter		Outer diameter	Inner diameter	Hub diameter	Hub tip diameter	Dia. of the RF diameter	Thickness (min)		Total length
							Butt weld type	Blind	
A	B	O	B	X	H	R	Q	Q_1	Y
650	26	850	As specified	689	660.4	711	88.9	88.9	149
700	28	915		740	711.2	762	95.3	95.3	159
750	30	970		794	762.0	819	101.6	101.6	170
800	32	1035		845	812.8	873	108.0	108.0	179
850	34	1085		899	863.6	927	111.2	111.2	187
900	36	1155		952	914.4	981	119.1	119.1	200

Nominal diameter		Corner radius	Bolt hole			Screw bolt		Stud Bolt length (reference)
			BCD	Bolt no.	Hole diameter	Unified	Metric	
A	B	r	C	N	d			
650	26	11	781.0	28	39	$1\frac{3}{8}$–8UN	M36×3	285
700	28	13	838.2	24	42	$1\frac{1}{2}$–8UN	M39×3	305
750	30	13	895.4	28	42	$1\frac{1}{2}$–8UN	M39×3	320
800	32	13	952.5	28	45	$1\frac{5}{8}$–8UN	M42×3	340
850	34	14	1003.3	32	45	$1\frac{5}{8}$–8UN	M42×3	345
900	36	14	1066.8	28	48	$1\frac{3}{4}$–8UN	M45×3	370

* This Table is same as the dimension shown in JPI-7S-43-2008 "Large diameter Carbon steel flanges for the Petroleum industry" Appendix 13.

r. Series B Class 600 (PN 110) Flange dimension Table (raised face)

(Unit : mm)

Nominal diameter		Outer diameter	Inner diameter	Hub diameter	Hub tip diameter	Dia. of the RF diameter	Thickness (min)		Total length
							Butt weld type	Blind	
A	B	O	B	X	H	R	Q	Q_1	Y
650	26	890	As specified	698	660.4	727	111.2	111.3	181
700	28	950		752	711.2	784	115.9	115.9	190
750	30	1020		806	762.0	841	125.5	127.0	205
800	32	1085		860	812.8	895	130.2	134.9	216
850	34	1160		914	863.6	953	141.3	144.2	233
900	36	1215		968	914.4	1010	146.1	150.9	243

Nominal diameter		Corner radius	Bolt hole			Screw bolt		Stud Bolt length (reference)
			BCD	Bolt no.	Hole diameter	Unified	Metric	
A	B	r	C	N	d			
650	26	13	806.4	28	45	$1\frac{5}{8}$ –8UN	M42×3	345
700	28	13	863.6	28	48	$1\frac{3}{4}$ –8UN	M45×3	360
750	30	13	927.1	28	51	$1\frac{7}{8}$ –8UN	M48×3	385
800	32	13	984.2	28	54	2 –8UN	M52×3	400
850	34	14	1054.1	24	60	$2\frac{1}{4}$ –8UN	M56×3	435
900	36	14	1104.9	28	60	$2\frac{1}{4}$ –8UN	M56×3	445

* This Table is same as the dimension shown in JPI-7S-43-2008 "Large diameter Carbon steel flanges for the Petroleum industry" Appendix 14.

s. Series B Class 900 (PN 150) Flange dimension Table (raised face)

(Unit: mm)

Nominal diameter		Outer diameter	Inner diameter	Hub diameter	Hub tip diameter	Dia. of the RF diameter	Thickness (min)		Total length
							Butt weld type	Blind	
A	B	O	B	X	H	R	Q	Q_1	Y
650	26	1020	As specified	743	660.4	762	135.0	154.0	259
700	28	1105		797	711.2	819	147.7	166.7	276
750	30	1180		851	762.0	876	155.6	176.1	289
800	32	1240		908	812.8	927	160.4	186.0	303
850	34	1315		962	863.6	991	171.5	195.0	319
900	36	1345		1016	914.4	1029	173.1	201.7	325

Nominal diameter		Corner radius	Bolt hole			Screw bolt		Stud Bolt length (reference)
			BCD	Bolt no.	Hole diameter	Unified	Metric	
A	B	r	C	N	d			
650	26	11	901.7	20	67	$2\frac{1}{2}$ –8UN	M64×3	435
700	28	13	971.6	20	74	$2\frac{3}{4}$ –8UN	M70×3	475
750	30	13	1035.0	20	80	3 –8UN	M76×3	505
800	32	13	1092.2	20	80	3 –8UN	M76×3	515
850	34	14	1155.7	20	86	$3\frac{1}{4}$ –8UN	M82×3	550
900	36	14	1200.2	24	80	3 –8UN	M76×3	540

* This Table is same as the dimension shown in JPI-7S-43-2008 "Large diameter Carbon steel flanges for the Petroleum industry" Appendix 15.

Bolt cross-sectional area and torque coefficient

Revised November 2010

Bolt name	Pitch P mm	Outer diameter d mm	Effective diameter d_2 mm	Root diameter d_1 mm	Cross-sectional area at root of thread A_1 mm^2	Effective cross-sectional area A_S mm^2	Torque coefficient K
M10	1.5	10	9.026	8.376	55.10	59.46	0.205
M12	1.75	12	10.863	10.106	80.21	86.33	0.202
M14	2	14	12.701	11.835	110.01	118.21	0.200
M16	2	16	14.701	13.835	150.33	159.89	0.198
M18	2.5	18	16.376	15.294	183.71	196.94	0.198
M20	2.5	20	18.376	17.294	234.90	249.83	0.196
M22	2.5	22	20.376	19.294	292.37	309.00	0.196
M24	3	24	22.052	20.752	338.23	359.75	0.196
M27	3	27	25.052	23.752	443.09	467.67	0.194
M30	3.5	30	27.727	26.211	539.58	571.24	0.195
M33	3.5	33	30.727	29.211	670.17	705.40	0.193
M36	4	36	33.402	31.670	787.75	831.42	0.194
M39	4	39	36.402	34.670	944.06	991.81	0.193
M42	4.5	42	39.077	37.129	1082.72	1140.27	0.194
M45	4.5	45	42.077	40.129	1264.76	1326.90	0.193
M48	5	48	44.752	42.588	1424.51	1497.81	0.194
M52	5	52	48.752	46.588	1704.66	1784.76	0.192
M56	5.5	56	52.428	50.046	1967.11	2061.85	0.192
M60	5.5	60	56.428	54.046	2294.12	2396.35	0.190
M64	6	64	60.103	57.505	2597.17	2715.84	0.190
M68	6	68	64.103	61.505	2971.06	3097.88	0.188
M30×3	3	30	28.052	26.752	562.09	589.73	0.193
M33×3	3	33	31.052	29.752	695.22	725.93	0.191
M36×3	3	36	34.052	32.752	842.49	876.26	0.191
M39×3	3	39	37.052	35.752	1003.90	1040.74	0.190
M42×3	3	42	40.052	38.752	1179.45	1219.34	0.190
M45×3	3	45	43.052	41.752	1369.13	1412.09	0.190
M48×3	3	48	46.052	44.752	1572.95	1618.97	0.189
M52×3	3	52	50.052	48.752	1866.70	1916.81	0.188
M56×3	3	56	54.052	52.752	2185.59	2239.78	0.187
M60×3	3	60	58.052	56.752	2529.60	2587.88	0.186
M64×3	3	64	62.052	60.752	2898.75	2961.11	0.185
M68×3	3	68	66.052	64.752	3293.03	3359.48	0.184

$d_2 = d-0.6495P$, $d_1 = d-1.0825P$

$A_1 = \pi d_1^2/4$, $A_S = \pi[(d_1+d_2)/2]^2/4$

$K = (P/\pi+\mu_S d_2 \sec\alpha'+\mu_W Dw)/2d$

μ_S: Bolt surface friction coefficient (=0.15), μ_W: Seating surface friction coefficient (=0.15)

α': Flank angle in the mountain right angle cross-section of the screw thread

$Dw = (2/3)\times(D_0^3-D_1^3)/(D_0^2-D_1^2)$

D_0: Value multiplied by 0.95 to standard dimensions of the dihedral width (the average grade)

D_1: Bolt hole diameter [=d+2 ($d \leqq 10$), d+3 ($10 < d \leqq 50$), d+4 ($d > 50$)]

* Based on dimension shown in JIS B 0205-2001

Revised November 2010

Bolt name	Pitch	Outer diameter d mm	Effective diameter d_2 mm	Root diameter d_1 mm	Cross-sectional area at root of thread A_1 mm^2	Effective cross-sectional area A_S mm^2	Torque coefficient K
1/2	13	12.7	11.431	10.585	88.00	95.17	0.203
5/8	11	15.875	14.375	13.375	140.50	151.20	0.200
3/4	10	19.05	17.400	16.300	208.67	222.99	0.198
7/8	9	22.225	20.392	19.170	288.62	307.31	0.196
1	8	25.4	23.338	21.963	378.86	402.94	0.196
1.1/8	7	28.575	26.218	24.647	477.11	508.01	0.195
1.1/4	7	31.75	29.393	27.822	607.95	642.76	0.194
1.3/8	6	34.925	32.175	30.342	723.07	767.41	0.194
1.1/2	6	38.1	35.350	33.517	882.38	931.22	0.193
1.5/8	6	41.275	38.525	36.692	1057.38	1110.87	0.195
1.3/4	5	44.45	41.150	38.951	1191.59	1259.81	0.193
1.7/8	6	47.625	44.875	43.042	1455.04	1517.66	0.192
2	4.5	50.8	47.134	44.690	1568.59	1655.55	0.192
2.1/4	4.5	57.15	53.483	51.040	2046.03	2145.13	0.190
2.1/2	4	63.5	59.376	56.626	2518.38	2642.17	0.190
2.3/4	4	69.85	65.726	62.976	3114.87	3252.37	0.189
3	4	76.2	72.076	69.326	3774.70	3925.92	0.188
3.1/4	4	82.55	78.426	75.676	4497.86	4662.80	0.188
3.1/2	4	88.9	84.776	82.026	5284.37	5463.02	0.187
3.3/4	4	95.25	91.126	88.376	6134.21	6326.57	0.186
4	4	101.6	97.476	94.726	7047.39	7253.47	0.186
1.1/8	8	28.575	26.513	25.138	496.31	523.83	0.194
1.1/4	8	31.75	29.688	28.313	629.60	660.54	0.192
1.3/8	8	34.925	32.863	31.488	778.72	813.09	0.191
1.1/2	8	38.1	36.038	34.663	943.67	981.48	0.190
1.5/8	8	41.275	39.213	37.838	1124.47	1165.70	0.192
1.3/4	8	44.45	42.388	41.013	1321.09	1365.75	0.188
1.7/8	8	47.625	45.568	44.188	1533.55	1581.82	0.190
2	8	50.8	48.738	47.363	1761.85	1813.37	0.187
2.1/4	8	57.15	55.088	53.713	2265.94	2324.32	0.186
2.1/2	8	63.5	61.438	60.063	2833.37	2898.61	0.185
2.3/4	8	69.85	67.788	66.413	3464.15	3536.24	0.185
3	8	76.2	74.138	72.763	4158.25	4237.20	0.184
3.1/4	8	82.55	80.488	79.113	4915.70	5001.51	0.184
3.1/2	8	88.9	86.838	85.463	5736.49	5829.15	0.183
3.3/4	8	95.25	93.188	91.813	6620.61	6720.14	0.183
4	8	101.6	99.538	98.163	7568.08	7674.46	0.183

d_2 = d-0.649519×25.4/n, d_1 = d-1.082532×25.4/n

n: Thread number for 25.4mm

$A_1 = \pi d_1^2/4$, $A_S = \pi[(d_1+d_2)/2]^2/4$

$K = (P/\pi+\mu_S d_2 \sec\alpha' + \mu_W Dw)/2d$

μ_S: Bolt surface friction coefficient (=0.15), μ_W: Seating surface friction coefficient (=0.15)

α': Flank angle in the mountain right angle cross-section of the screw thread

$Dw = (2/3)\times(D_0^3-D_1^3) / (D_0^2-D_1^2)$

D_0: Value multiplied by 0.95 to standard dimensions of the dihedral width (and HEAVY HEX)

D_1: Bolt hole diameter [=d+3.175]

* Based on dimension shown in JIS B 0205-2001

Design stress value of bolt material (JPI-7S-77-2018 Appendix A)

Carbon steel

JIS,JPI or ASTM standard number	Material symbol	Base material or standard component (%)	Note number	Tensile Strength, min N/mm²	Yield Strength, min N/mm²	Lowest temperature (℃)	Design stress value at each temperature							
							Lowest temperature ~ 40	75	100	125	150	175	200	225
G3101	SS 400(ϕ Below 16)		(112)	400	245	0	61	61	61	61	61	61	61	61
G3101	SS 400(ϕ Above 16 ϕ below 40)		(112)	400	235	0	59	59	59	59	59	59	59	59
G4051	S 25C (N)		(8-g) (110)	(440)	…	–30	66	66	66	66	66	66	66	66
G4051	S 35C (H)		(8-g) (110)	(570)	…	–30	98	98	98	98	98	98	98	98
G3101	SS 400	Nut	(112)	…	…	0	…	…	…	…	…	…	…	…
G4051	S 20C (N)	Nut	…	…	…	–30	…	…	…	…	…	…	…	…
G4051	S 25C (N)	Nut	…	…	…	–30	…	…	…	…	…	…	…	…
G4051	S 45C (H)	Nut	…	…	…	–30	…	…	…	…	…	…	…	…
(A 194)	2H	Nut	(42)	…	…	–48	…	…	…	…	…	…	…	…

Low Alloy steel

JIS,JPI or ASTM standard number	Material symbol	Base material or standard component (%)	Note number	Tensile Strength, min N/mm²	Yield Strength, min N/mm²	Lowest temperature (℃)	Design stress value at each temperature							
							Lowest temperature ~ 38	75	100	125	150	175	200	225
G4107	SNB 5 (ϕ Below 100)	5Cr-0.5Mo	(15)	690	550	–30	138	138	138	138	138	138	138	138
G4107	SNB 7 (ϕ Below 63)	1Cr-0.2Mo	…	860	725	–30	172	172	172	172	172	172	172	172
G4107	SNB 7 (ϕ Above 63 ϕ below 100)	1Cr-0.2Mo	(15)	800	655	–30	160	160	160	160	160	160	160	160
G4107	SNB 16 (ϕ Below 63)	1Cr-0.5Mo-V	(15)	860	725	–30	172	172	172	172	172	172	172	172
G4107	SNB 16 (ϕ Above 63 ϕ below 100)	1Cr-0.5Mo-V	(15)	760	655	–30	152	152	152	152	152	152	152	152
(A 320)	L 7 (ϕ Below 63)	1Cr-Mo	(15)	862	724	–101	172	172	172	172	172	172	172	172
(A 320)	L 7A、L 7B、L 7C (ϕ Below 63)	Cr-Mo	(15)	862	724	–101	172	172	172	172	172	172	172	172
(A 320)	L 4 3(ϕ Below 100)	Ni-Cr-Mo	(15)	862	724	–101	172	172	172	172	172	172	172	172
(A 193)	B 7M (ϕ Below 63)	Cr-0.2Mo	…	689	552	–48	138	138	138	138	138	138	138	138
(A 354)	BC		(15)	793	683	–18	159	159	159	159	159	159	159	159
(A 354)	BD (ϕ Below 63)		(15)	1034	896	–7	207	207	207	207	207	207	207	207
(A 194)	3	5Cr Nut	(42)	…	…	–29								
(A 194)	4	C-Mo Nut	(42)	…	…	–48	…	…	…	…	…	…	…	…
(A 194)	4L	C-Mo Nut	(42)	…	…	–101								
(A 194)	7	1Cr-Mo Nut	(42)	…	…	–48								
(A 194)	7L	1Cr-Mo Nut	(42)	…	…	–101								
(A 194)	7M	1Cr-Mo Nut	(42)	…	…	–48								
(A 194)	7ML	1Cr-Mo Nut	(42)	…	…	–73								

Carbon steel

Design stress value at each temperature (N/mm²)																			Equivalent ASTM Standard Number, Material Symbol (similar Material shown in Bracket)
250	275	300	325	350	375	400	425	450	475	500	525	550	575	600	625	650	675	700	
…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	
…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	
66	66	66	66	66	…	…	…	…	…	…	…	…	…	…	…	…	…	…	
98	98	98	98	98	…	…	…	…	…	…	…	…	…	…	…	…	…	…	
…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	
…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	(A 194 Gr 1)
…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	
…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	
…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	

Low Alloy steel

Design stress value at each temperature (N/mm²)																			Equivalent ASTM Standard Number, Material Symbol (similar Material shown in Bracket)
250	275	300	325	350	375	400	425	450	475	500	525	550	575	600	625	650	675	700	
138	138	138	138	138	138	138	119	105	78	58	44	33	26	19	13	9	4(677℃)	…	A 193 B 5
172	172	172	172	172	172	163	146	122	94	69	44	31	17(566℃)	…	…	…	…	…	A 193 B 7
160	160	160	160	160	158	142	139	116	92	69	44	31	17(566℃)	…	…	…	…	…	A 193 B 7
172	172	172	172	172	172	172	172	165	148	124	92	63	34	19	8(621℃)	…	…	…	A 193 B 16
152	152	152	152	152	152	152	152	147	133	115	90	63	34	19	8(621℃)	…	…	…	A 193 B 16
172	172	172	172	172	172	172(399℃)	…	…	…	…	…	…	…	…	…	…	…	…	
172	172	172	172	172	172(371℃)	…	…	…	…	…	…	…	…	…	…	…	…	…	
172	172	172	172	172	172	172(399℃)	…	…	…	…	…	…	…	…	…	…	…	…	
138	138	138	138	138	138	137	128	114	93	69	44	31	17(566℃)	…	…	…	…	…	
159	159	159	152	152	159(371℃)	…	…	…	…	…	…	…	…	…	…	…	…	…	
207	207	207	207	207	207(371℃)	…	…	…	…	…	…	…	…	…	…	…	…	…	
…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	

Design stress value of bolt material

Stainless steel

JIS,JPI or ASTM standard number	Material symbol	Base material or standard component (%)	Note number	Tensile Strength, min N/mm²	Yield Strength, min N/mm²	Lowest temperature (℃)	Design stress value at each temperature								
							Lowest temperature ~ 40	75	100	125	150	175	200	225	250
G4303	SUS 304	18Cr-8Ni	(8-f) (114)	520	205	–269	102	95	90	86	82	79	76	73	71
G4303	SUS 316	18Cr-8Ni-2Mo	(8-f) (114)	520	205	–269	102	102	102	98	93	90	87	85	84
G4303	SUS 321	18Cr-10Ni-Ti	(8-f) (114)	520	205	–269	102	102	102	98	93	90	87	85	84
G4303	SUS 347	18Cr-10Ni-Mo	(8-f) (114)	520	205	–269	102	102	102	98	93	90	87	85	84
(A 193)	B 8 CL1	304	(8-f) (15) (28)	517	207	–254	130	120	114	108	103	100	96	93	90
(A 193)	B 8M CL1	316	(8-f) (15) (28)	517	207	–198	130	123	118	113	107	103	99	96	93
(A 193)	B 8T CL1	321	(8-f) (15) (28)	517	207	–198	130	130	122	118	114	110	106	103	100
(A 193)	B 8C CL1	347	(8-f) (15) (28)	517	207	–254	130	130	122	118	113	110	107	106	104
(A 193) (A 320)	B 8 CL2 (ϕ Below 19.1)	304 str. hd.	(15) (60)	862	689	–198	172	172	172	172	172	172	172	172	172
(A 193) (A 320)	B 8 CL2 (ϕ Above 19.1 ϕ below 25.4)	304 str. hd.	(15) (60)	793	552	–198	138	138	138	138	138	138	138	138	138
(A 193) (A 320)	B 8 CL2 (ϕ Above 25.4 ϕ below 31.8)	304 str. hd.	(15) (60)	724	448	–198	130	120	115	114	112	112	112	112	112
(A 193) (A 320)	B 8 CL2 (ϕ Above 31.8 ϕ below 38.1)	304 str. hd.	(15) (60)	689	345	–198	130	120	114	108	103	100	96	93	90
(A 193) (A 320)	B 8T CL2 (ϕ Below 19.1)	321 str. hd.	(15) (60)	862	689	–198	172	172	172	172	172	172	172	172	172
(A 193) (A 320)	B 8T CL2 (ϕ Above 19.1 ϕ below 25.4)	321 str. hd.	(15) (60)	793	552	–198	138	138	138	138	138	138	138	138	138
(A 193) (A 320)	B 8T CL2 (ϕ Above 25.4 ϕ below 31.8)	321 str. hd.	(15) (60)	724	448	–198	130	125	122	118	114	113	112	112	112
(A 193) (A 320)	B 8T CL2 (ϕ Above 31.8 ϕ below 38.1)	321 str. hd.	(15) (60)	689	345	–198	130	125	122	118	114	110	106	103	100
(A 193) (A 320)	B 8M CL2 (ϕ Below 19.1)	316 str. hd.	(15) (60)	758	655	–198	152	152	152	152	152	152	152	152	152
(A 193) (A 320)	B 8M CL2 (ϕ Above 19.1 ϕ below 25.4)	316 str. hd.	(15) (60)	689	552	–198	138	138	138	138	138	138	138	138	138
(A 193) (A 320)	B 8M CL2 (ϕ Above 25.4 ϕ below 31.8)	316 str. hd.	(15) (60)	655	448	–198	130	123	118	115	112	112	112	112	112
(A 193) (A 320)	B 8M CL2 (ϕ Above 31.8 ϕ below 38.1)	316 str. hd.	(15) (60)	621	345	–198	130	123	118	113	107	103	99	96	93
(A 193) (A 320)	B 8C CL2 (ϕ Below 19.1)	347 str. hd.	(15) (60)	862	689	–198	172	172	172	172	172	172	172	172	172
(A 193) (A 320)	B 8C CL2 (ϕ Above 19.1 ϕ below 25.4)	347 str. hd.	(15) (60)	793	552	–198	138	138	138	138	138	138	138	138	138
(A 193) (A 320)	B 8C CL2 (ϕ Above 25.4 ϕ below 31.8)	347 str. hd.	(15) (60)	724	448	–198	130	125	122	118	114	113	112	112	112
(A 193) (A 320)	B 8C CL2 (ϕ Above 31.8 ϕ below 38.1)	347 str. hd.	(15) (60)	689	345	–198	130	125	122	118	114	111	107	106	104
(A 193)	B 6 (ϕ Below 100)	13Cr	(15) (35)	758	586	–29	147	147	147	147	147	147	147	147	147
(A 194)	6	12Cr Nut	(35) (42)	…	…	–29	…	…	…	…	…	…	…	…	…
(A 194)	8	304 Nut	(42)	…	…	–254	…	…	…	…	…	…	…	…	…
(A 194)	8CA	347 Nut	(42)												
(A 194)	8MA	316 Nut	(42)	…	…	–198	…	…	…	…	…	…	…	…	…
(A 194)	8TA	321 Nut	…												

Stainless steel---pipe fittings

Design stress value at each temperature (N/mm²)																							Equivalent ASTM Standard Number, Material Symbol (similar Material shown in Bracket)
275	300	325	350	375	400	425	450	475	500	525	550	575	600	625	650	675	700	725	750	775	800	815	
68	66	64	61	59	57	56	53	52	50	49	48	46	43	38	30	23	18	14	10	8	6	…	
83	82	82	81	81	80	80	79	78	77	77	74	72	68	57	47	37	28	23	18	14	10	…	
83	82	82	81	81	80	80	79	78	77	77	74	72	68	52	34	26	20	15	12	9	8	…	
83	82	82	81	81	80	80	79	78	77	77	74	72	68	52	34	26	20	15	12	9	8	…	
88	86	84	82	81	79	77	76	75	74	72	71	69	64	52	42	33	27	21	17	14	11	10	
90	88	86	84	83	82	81	80	79	79	78	78	77	74	65	51	39	31	24	19	14	11	10	
97	95	93	91	89	88	86	86	85	84	83	75	60	44	33	25	18	13	9	6	4	3	2	
102	100	98	97	95	94	94	93	93	93	92	88	76	58	40	30	23	16	12	9	7	6	6	
172	172	172	172	172	172	172	172	172	171	167	162	158(566℃)…	…	…	…	…	…	…	…	…	…		
138	138	138	138	138	138	138	138	138	138	138	138	138(566℃)…	…	…	…	…	…	…	…	…	…		
112	112	112	112	112	112	112	112	112	112	112	112	112(566℃)…	…	…	…	…	…	…	…	…	…		
88	87	86	86	86	86	86	86	86	86	86	86	86(566℃) …	…	…	…	…	…	…	…	…	…		
172	172	172	172	172	172	172	172	172	172	172	172	172(566℃)…	…	…	…	…	…	…	…	…	…		
138	138	138	138	138	138	138	138	138	138	138	138	138(566℃)…	…	…	…	…	…	…	…	…	…		
112	112	112	112	112	112	112	112	112	112	112	112	112(566℃)…	…	…	…	…	…	…	…	…	…		
97	95	92	91	89	88	86	86	86	86	86	86	86(566℃) …	…	…	…	…	…	…	…	…	…		
152	152	152	152	152	152	152	80	75	74	73	73	152(566℃)…	…	…	…	…	…	…	…	…	…		
138	138	138	138	138	138	138	79	75	74	73	73	138(566℃)…	…	…	…	…	…	…	…	…	…		
112	112	112	112	112	112	112	81	75	74	73	73	112(566℃)…	…	…	…	…	…	…	…	…	…		
90	88	87	86	86	86	86	86	86	86	86	86	86(566℃) …	…	…	…	…	…	…	…	…	…		
172	170	169	169	169	169	169	169	168	167	166	164	162(566℃)…	…	…	…	…	…	…	…	…	…		
138	138	138	138	138	138	138	138	138	138	138	138	138(566℃)…	…	…	…	…	…	…	…	…	…		
112	112	112	112	112	112	112	112	112	112	112	112	112(566℃)…	…	…	…	…	…	…	…	…	…		
102	100	98	96	95	94	94	93	93	92	92	90	86(566℃) …	…	…	…	…	…	…	…	…	…		
147	147	147	147	147	147	147	147	141	133	129(510℃)…	…	…	…	…	…	…	…	…	…	…	…		
…	…	…	…	…	…	…	(427℃)	…	…	…	…	…	…	…	…	…	…	…	…	…	…		
…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…		
…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…		

Design stress value of bolt material

Nickel and nickel alloy

JIS,JPI or ASTM standard number	Material symbol	Base material or standard component (%)	Note number	Tensile Strength, min N/mm²	Yield Strength, min N/mm²	Lowest temperature (℃)	Design stress value at each temperature							
							Lowest temperature ~ 38	75	100	125	150	175	200	225
(B 160)	N02201 Ann. Hot fin.	Low C-Ni	(8-f)	345	69	–198	46	45	44	44	43	43	43	43
(B 160)	N02200 Hot fin.	Ni	(8-f)	414	103	–198	69	69	69	69	69	69	69	69
(B 160)	N02200 Annealed	Ni	(8-f)	379	103	–198	69	69	69	69	69	69	69	69
(B 160)	N02200 Cold drawn	Ni	…	448	276	–198								
(B 164)	N04400 C.D./Str. rel.	Ni-Cu	(54)	579	345	–198	115	105	100	97	94	92	91	91
(B 164)	N04405 Cold drawn	Ni-Cu	(54)	586	345	–198								
(B 164)	N04400 Cold drawn	Ni-Cu	(54)	586	379	–198	115	105	100	98	95	95	95	95
(B 164)	N04400 Annealed	Ni-Cu	(8-f)	483	172	–198	114	105	100	97	94	92	91	91
(B 164)	N04405 Annealed	Ni-Cu	(8-f)	483	172	–198								
(B 164)	N04405 Hot fin. (ϕ Below 76)	Ni-Cu	…	517	241	–198	115	105	100	97	94	92	91	91
(B 164)	N04400 Hot fin. (Hex. ϕ Above 63 ϕ below 100)	Ni-Cu	(8-f)	517	207	–198	115	105	100	97	94	92	91	91
(B 164)	N04400 Hot fin. (Exclude Hex., ϕ Above 63)	Ni-Cu	…	552	276	–198	115	105	100	97	94	92	91	91
(B 166)	N06600 Cold drawn (ϕ Below 76)	Ni-Cr-Fe	(41) (54)	724	552	–198	138	138	138	138	138	138	138	138
(B 166)	N06600 Hot fin. (ϕ Below 76)	Ni-Cr-Fe	…	621	276	–198	115	111	109	107	105	103	101	99
(B 166)	N06600 Hot fin. (ϕ Above 76)	Ni-Cr-Fe	…	586	241	–198	115	111	109	107	105	103	101	99
G 4901	NCF 600 Annealed	72Ni-15Cr-8Fe	…	550	245	–196	60	57	56	55	54	54	53	53
(B 335)	N10001 Annealed	Ni-Mo	…	689	317	–198	172	172	172	172	172	171	170	169
(B 574)	N10276 Sol. Annealed	Ni-Mo-Cr	…	689	283	–198	172	172	170	164	158	153	148	143

Nickel and nickel alloy

Design stress value at each temperature (N/mm²)																			Equivalent ASTM Standard Number, Material Symbol (similar Material shown in Bracket)
250	275	300	325	350	375	400	425	450	475	500	525	550	575	600	625	650	675	700	
43	43	43	43	43	43	42	41	40	33	27	23	19	16	13	10	8	7(677℃)	…	
69	69	69	69(343℃)	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	
69	69	69	69(343℃)	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	
90	90	90	90	90(343℃)	…	…	…	…	…	…	…	…	…	…	…	…	…	…	
95	95(260℃)	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	
90	90	90	90	90	90	90	88	78	61	55	63(510℃)	…	…	…	…	…	…	…	
90	90	90	90	90	90	89	88	87	86	72	63(510℃)	…	…	…	…	…	…	…	
90	90	90	90	90	90	89	88	87	86	72	63(510℃)	…	…	…	…	…	…	…	
90	90	90	90	90	90	89	88	87	86	72	63(510℃)	…	…	…	…	…	…	…	
138	138(260℃)	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	
97	96	94	93	91	90	89	88	86	86	75	58	41	28	19	15	14	12(677℃)	…	
97	96	94	93	91	90	89	88	86	86	71	55	41	28	19	15	14	12(677℃)	…	
53	52	52	51	51	50	50	49	48	48	47	47	41	29	20	17	14	…	…	(B 166 N06600 Annealed)
168	166	165	163	161	158	157	155	155	155(454℃)	…	…	…	…	…	…	…	…	…	
139	135	131	128	125	122	120	118	117	116	115	114	114	114(566℃)	…	…	…	…	…	

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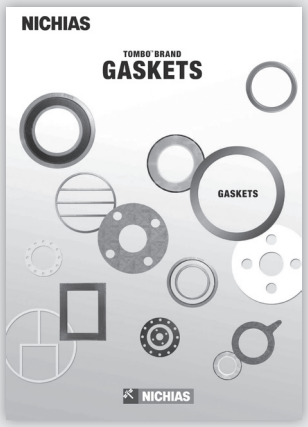

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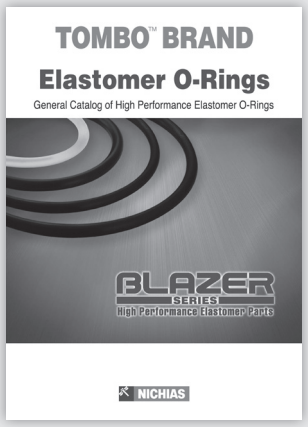

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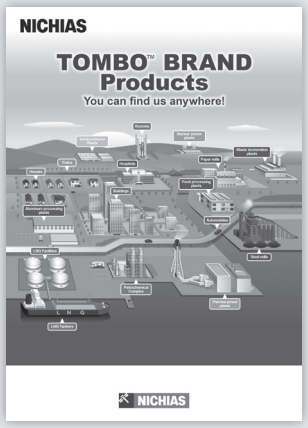

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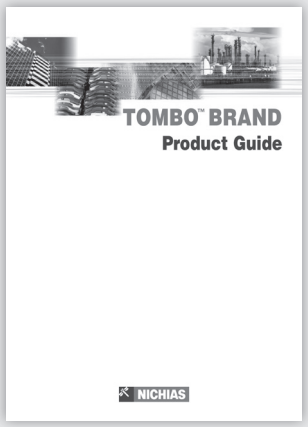

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