

Bolt Torque Values - MULTIPAC™ (Sheet Ring Gaskets / Raised Face Flanges)

Sheet Ring Gaskets on ASME B16.5 Raised Face Flanges with ASTM A193 Gr. B7 Bolts / A194 Gr. 2H Nuts

Applicable Products: Multipac 6000, 6101, 6101G, 6300, 6400, 6500, 6700, 6900, Style 5100

Sheet Ring Gaskets on ASME B16.5 Raised Face Flange - Class 150						
Flange Size (in.)	1/16" THK		1/8" THK		No. of Bolts	Bolt Size (in.)
	MIN Torque. (ft-lbs.)	MAX Torque. (ft-lbs.)	MIN Torque. (ft-lbs.)	MAX Torque. (ft-lbs.)		
	All Styles		All Styles			
1/2	7	29	9	29	4	1/2
3/4	10	43	14	43	4	1/2
1	13	56	18	56	4	1/2
1-1/4	21	66	27	66	4	1/2
1-1/2	27	66	36	66	4	1/2
2	55	132	73	132	4	5/8
2-1/2	64	132	85	132	4	5/8
3	94	132	125	132	4	5/8
3-1/2	52	132	70	132	8	5/8
4	67	132	89	132	8	5/8
5	100	238	133	238	8	3/4
6	126	238	167	238	8	3/4
8	170	238	227	238	8	3/4
10	161	385	215	385	12	7/8
12	215	385	286	385	12	7/8
14	267	578	356	578	12	1
16	254	578	339	578	16	1
18	388	859	517	859	16	1-1/8
20	342	859	456	859	20	1-1/8
24	491	1219	654	1219	20	1-1/4

NOTES: 1) The design bolt stress used for calculation is based on 60% of bolt yield at room temperature. 2) Assuming new, non-coated and well lubricated bolts and nuts are used with through-hardened washers. K factor of 0.20 was used in the calculation per ASME PCC-1. Multiply torque values by a factor of "K / 0.20" if using a lubricant with a different K factor. 3) Assuming maximum internal pressure follows ASME B16.5 Pressure-Temperature rating tables. 4) Assuming ASME PCC-1 bolting pattern is followed. 5) Flange imperfections, rotation and deflection are ignored. 6) Bolt torque values in above Tables are for reference only. User is responsible for applying appropriate bolt loads to properly seat the gasket.

Bolt Torque Values - MULTIPAC™ (Sheet Ring Gaskets / Raised Face Flanges)

Sheet Ring Gaskets on ASME B16.5 Raised Face Flanges with ASTM A193 Gr. B7 Bolts / A194 Gr. 2H Nuts

Applicable Products: Multipac 6000, 6101, 6101G, 6300, 6400, 6500, 6700, 6900, Style 5100

Sheet Ring Gaskets on ASME B16.5 Raised Face Flange - Class 300						
Flange Size (in.)	1/16" THK		1/8" THK		No. of Bolts	Bolt Size (in.)
	MIN Torque. (ft-lbs.)	MAX Torque (ft-lbs.)	MIN Torque (ft-lbs.)	MAX Torque (ft-lbs.)		
	All Styles		All Styles			
1/2	11	29	13	29	4	1/2
3/4	19	53	23	53	4	5/8
1	25	70	30	70	4	5/8
1-1/4	39	107	46	107	4	5/8
1-1/2	62	171	73	171	4	3/4
2	41	114	49	114	8	5/8
2-1/2	58	160	68	160	8	3/4
3	84	235	100	235	8	3/4
3-1/2	94	238	112	238	8	3/4
4	120	238	142	238	8	3/4
5	149	238	177	238	8	3/4
6	126	238	149	238	12	3/4
8	198	385	235	385	12	7/8
10	208	577	246	577	16	1
12	310	859	368	859	16	1-1/8
14	271	752	321	752	20	1-1/8
16	381	1058	452	1058	20	1-1/4
18	431	1197	511	1197	24	1-1/4
20	475	1219	563	1219	24	1-1/4
24	736	2044	872	2044	24	1-1/2

NOTES: 1) The design bolt stress used for calculation is based on 60% of bolt yield at room temperature. 2) Assuming new, non-coated and well lubricated bolts and nuts are used with through-hardened washers. K factor of 0.20 was used in the calculation per ASME PCC-1. Multiply torque values by a factor of "K / 0.20" if using a lubricant with a different K factor. 3) Assuming maximum internal pressure follows ASME B16.5 Pressure-Temperature rating tables. 4) Assuming ASME PCC-1 bolting pattern is followed. 5) Flange imperfections, rotation and deflection are ignored. 6) Bolt torque values in above Tables are for reference only. User is responsible for applying appropriate bolt loads to properly seat the gasket.

Bolt Torque Values - MULTIPAC™ (Full Face Gaskets / Flat Face Flanges)

Full Face Gaskets on ASME B16.5 Flat Face Flanges with ASTM A193 Gr. B7 Bolts / A194 Gr. 2H Nuts.

Applicable Products: Multipac 6000, 6101, 6101G, 6300, 6400, 6500, 6700, 6900, Style 5100

Full Face Gaskets on ASME B16.5 Flat Face Flange - Class 150										
Flange Size (in.)	1/16" THK							No. of Bolts	Bolt Size (in.)	
	MIN Torque. (ft.-lbs.)						MAX Torque. (ft.-lbs.)			
	Style 5100	Multipac 6000	Multipac 6101	Multipac 6101G	Multipac 6300	Multipac 6400	Multipac 6500			All Styles
1/2	21	17	21	29	22	18	26	66	4	1/2
3/4	24	20	24	33	26	21	30	66	4	1/2
1	28	23	28	38	30	24	34	66	4	1/2
1-1/4	31	26	31	42	33	27	38	66	4	1/2
1-1/2	34	29	34	47	37	30	43	66	4	1/2
2	57	47	57	79	61	50	71	132	4	5/8
2-1/2	72	60	72	99	78	63	90	132	4	5/8
3	77	64	77	106	83	69	96	132	4	5/8
3-1/2	47	39	47	65	50	43	58	132	8	5/8
4	50	42	50	69	54	47	62	132	8	5/8
5	67	56	67	92	72	66	84	238	8	3/4
6	74	62	74	102	80	77	93	238	8	3/4
8	97	82	97	134	113	109	122	238	8	3/4
10	97	88	94	130	117	114	118	385	12	7/8
12	134	122	123	169	160	156	154	385	12	7/8
14	185	169	165	227	221	214	206	578	12	1
16	171	157	148	198	202	196	180	578	16	1
18	213	196	186	231	249	242	209	859	16	1-1/8
20	203	188	179	211	236	230	191	859	20	1-1/8
24	299	278	266	307	343	335	266	1219	20	1-1/4
Flange Size (in.)	1/8" THK							No. of Bolts	Bolt Size (in.)	
	MIN Torque. (ft.-lbs.)						MAX Torque. (ft.-lbs.)			
	Style 5100	Multipac 6000	Multipac 6101	Multipac 6101G	Multipac 6300	Multipac 6400	Multipac 6500			All Styles
1/2	25	26	30	29	36	21	31	66	4	1/2
3/4	29	30	35	33	42	24	36	66	4	1/2
1	33	34	40	38	48	28	41	66	4	1/2
1-1/4	37	38	44	42	53	32	46	66	4	1/2
1-1/2	41	42	50	47	59	36	52	66	4	1/2
2	68	70	83	79	98	62	85	132	4	5/8
2-1/2	86	89	104	99	124	80	108	132	4	5/8
3	93	95	112	106	132	88	116	132	4	5/8
3-1/2	56	58	68	65	81	55	70	132	8	5/8
4	60	62	72	69	86	60	75	132	8	5/8
5	80	83	97	92	116	83	101	238	8	3/4
6	89	91	107	102	128	96	111	238	8	3/4
8	117	120	141	134	168	134	146	238	8	3/4
10	113	116	137	130	162	138	141	385	12	7/8
12	147	151	178	169	212	187	184	385	12	7/8
14	198	203	239	227	284	256	247	578	12	1
16	173	177	208	198	248	233	216	578	16	1
18	213	206	242	231	288	285	251	859	16	1-1/8
20	203	188	222	211	263	269	229	859	20	1-1/8
24	299	278	298	307	379	387	308	1219	20	1-1/4

NOTES: 1) The design bolt stress used for calculation is based on 60% of bolt yield at room temperature. 2) Assuming new, non-coated and well lubricated bolts and nuts are used with through-hardened washers. K factor of 0.20 was used in the calculation per ASME PCC-1. Multiply torque values by a factor of "K / 0.20" if using a lubricant with a different K factor. 3) Assuming maximum internal pressure follows ASME B16.5 Pressure-Temperature rating tables. 4) Assuming ASME PCC-1 bolting pattern is followed. 5) Flange imperfections, rotation and deflection are ignored. 6) Bolt torque values in above Tables are for reference only. User is responsible for applying appropriate bolt loads to properly seat the gasket.

Bolt Torque Values - MULTIPAC™ (Full Face Gaskets / Flat Face Flanges)

Full Face Gaskets on ASME B16.5 Flat Face Flanges with ASTM A193 Gr. B7 Bolts / A194 Gr. 2H Nuts.

Applicable Products: Multipac 6000, 6101, 6101G, 6300, 6400, 6500, 6700, 6900, Style 5100

Full Face Gaskets on ASME B16.5 Flat Face Flange - Class 300										
Flange Size (in.)	1/16" THK								No. of Bolts	Bolt Size (in.)
	MIN Torque. (ft.-lbs.)							MAX Torque. (ft.-lbs.)		
	Style 5100	Multipac 6000	Multipac 6101	Multipac 6101G	Multipac 6300	Multipac 6400	Multipac 6500	All Styles		
1/2	34	28	25	36	47	45	29	66	4	1/2
3/4	62	52	46	67	86	81	51	132	4	1/2
1	68	57	50	73	93	89	55	132	4	1/2
1-1/4	77	65	58	82	104	100	60	132	4	1/2
1-1/2	123	104	93	131	165	157	93	238	4	1/2
2	56	48	43	60	75	72	43	132	4	5/8
2-1/2	88	75	68	93	115	110	68	238	4	5/8
3	103	89	81	109	134	129	81	238	4	5/8
3-1/2	120	104	95	127	156	149	95	238	8	5/8
4	146	127	116	153	187	180	116	238	8	5/8
5	171	150	138	179	217	209	138	238	8	3/4
6	143	127	117	150	180	173	117	238	8	3/4
8	231	207	192	241	285	275	192	385	8	3/4
10	261	235	220	271	317	307	220	578	12	7/8
12	393	357	335	408	473	459	335	859	12	7/8
14	392	357	336	406	470	455	336	859	12	1
16	526	481	455	544	624	607	455	1219	16	1
18	520	478	453	537	613	596	453	1219	16	1-1/8
20	609	562	534	628	713	694	534	1219	20	1-1/8
24	998	926	883	1027	1156	1127	883	2213	20	1-1/4

1/8" THK										
Flange Size (in.)	MIN Torque. (ft.-lbs.)								No. of Bolts	Bolt Size (in.)
	MIN Torque. (ft.-lbs.)							MAX Torque. (ft.-lbs.)		
	Style 5100	Multipac 6000	Multipac 6101	Multipac 6101G	Multipac 6300	Multipac 6400	Multipac 6500	All Styles		
1/2	34	29	34	36	58	60	35	66	4	1/2
3/4	62	52	60	67	104	109	62	132	4	5/8
1	68	57	64	73	113	118	66	132	4	5/8
1-1/4	77	65	70	82	127	132	73	132	4	5/8
1-1/2	123	104	108	131	199	206	112	238	4	3/4
2	56	48	48	60	90	93	50	132	8	5/8
2-1/2	88	75	75	93	138	143	75	238	8	3/4
3	103	89	89	109	160	166	89	238	8	3/4
3-1/2	120	104	104	127	184	191	104	238	8	3/4
4	146	127	127	153	221	229	127	238	8	3/4
5	171	150	150	179	238	238	150	238	8	3/4
6	143	127	127	150	210	216	127	238	12	3/4
8	231	207	207	241	329	339	207	385	12	7/8
10	261	235	235	271	363	373	235	578	16	1
12	393	357	357	408	538	553	357	859	16	1-1/8
14	392	357	357	406	533	547	357	859	20	1-1/8
16	526	481	481	544	705	723	481	1219	20	1-1/4
18	520	478	478	537	689	706	478	1219	24	1-1/4
20	609	562	562	628	798	817	562	1219	24	1-1/4
24	998	926	926	1027	1285	1314	926	2213	24	1-1/2

NOTES: 1) The design bolt stress used for calculation is based on 60% of bolt yield at room temperature. 2) Assuming new, non-coated and well lubricated bolts and nuts are used with through-hardened washers. K factor of 0.20 was used in the calculation per ASME PCC-1. Multiply torque values by a factor of "K / 0.20" if using a lubricant with a different K factor. 3) Assuming maximum internal pressure follows ASME B16.5 Pressure-Temperature rating tables. 4) Assuming ASME PCC-1 bolting pattern is followed. 5) Flange imperfections, rotation and deflection are ignored. 6) Bolt torque values in above Tables are for reference only. User is responsible for applying appropriate bolt loads to properly seat the gasket.