Bolt Torque Values - ULTRAGRAF® (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: Ultragraf EF, EFX & EFX2

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.)		
	Ultragraf EF, EFX & EFX2		Ultragraf EF, EFX & EFX2			
1/2	7	20	9	20	4	1/2
3/4	10	28	14	28	4	1/2
1	13	37	18	37	4	1/2
1-1/4	21	57	27	57	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 - ULTRAGRAF® (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: Ultragraf EF, EFX & EFX2

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.)		
	Ultragraf EF, EFX & EFX2		Ultragraf EF, EFX & EFX2			
1/2	11	20	13	20	4	1/2
3/4	19	35	23	35	4	5/8
1	25	47	30	47	4	5/8
1-1/4	39	71	46	71	4	5/8
1-1/2	62	114	73	114	4	3/4
2	41	76	49	76	8	5/8
2-1/2	58	107	68	107	8	3/4
3	84	156	100	156	8	3/4
3-1/2	94	175	112	175	8	3/4
4	120	222	142	222	8	3/4
5	149	238	177	238	8	3/4
6	126	233	149	233	12	3/4
8	198	367	235	367	12	7/8
10	208	385	246	385	16	1
12	310	575	368	575	16	1-1/8
14	271	501	321	501	20	1-1/8
16	381	706	452	706	20	1-1/4
18	431	798	511	798	24	1-1/4
20	475	879	563	879	24	1-1/4
24	736	1363	872	1363	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 - ULTRAGRAF® (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: Ultragraf EF, EFX & EFX2

Full Face Gaskets on ASME B16.5 Flat 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.)		
	Ultragraf EF	Ultragraf EFX	Ultragraf EF, Ultragraf EFX, Ultragraf EFX2	Ultragraf EF	Ultragraf EFX	Ultragraf EF, Ultragraf EFX, Ultragraf EFX2		
1/2	22	18	66	31	26	66	4	1/2
3/4	26	21	66	36	30	66	4	1/2
1	30	24	66	41	34	66	4	1/2
1-1/4	34	28	66	46	38	66	4	1/2
1-1/2	38	32	66	52	43	66	4	1/2
2	65	54	132	85	71	132	4	5/8
2-1/2	85	70	132	108	90	132	4	5/8
3	93	78	132	116	96	132	4	5/8
3-1/2	57	48	132	70	58	132	8	5/8
4	63	53	132	75	63	132	8	5/8
5	87	74	238	101	87	238	8	3/4
6	100	86	238	115	100	238	8	3/4
8	140	121	238	159	140	238	8	3/4
10	143	125	385	162	143	385	12	7/8
12	194	170	385	218	194	385	12	7/8
14	266	234	578	298	266	578	12	1
16	241	213	578	270	241	578	16	1
18	295	262	859	328	295	859	16	1-1/8
20	278	248	859	308	278	859	20	1-1/8
24	399	359	1219	440	399	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 - ULTRAGRAF® (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: Ultragraf EF, EFX & EFX2

Full Face Gaskets on ASME B16.5 Flat 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.)		
	Ultragraf EF	Ultragraf EFX	Ultragraf EF, Ultragraf EFX, Ultragraf EFX2	Ultragraf EF	Ultragraf EFX	Ultragraf EF, Ultragraf EFX, Ultragraf EFX2		
1/2	64	52	66	66	64	66	4	1/2
3/4	115	94	132	132	115	132	4	5/8
1	125	102	132	132	125	132	4	5/8
1-1/4	132	114	132	132	132	132	4	5/8
1-1/2	218	180	238	238	218	238	4	3/4
2	99	82	132	115	99	132	8	5/8
2-1/2	150	125	238	175	150	238	8	3/4
3	174	146	238	202	174	238	8	3/4
3-1/2	200	168	238	232	200	238	8	3/4
4	238	202	238	238	238	238	8	3/4
5	238	234	238	238	238	238	8	3/4
6	226	193	238	238	226	238	12	3/4
8	354	305	385	385	354	385	12	7/8
10	388	337	578	439	388	578	16	1
12	574	502	859	647	574	859	16	1-1/8
14	568	498	859	638	568	859	20	1-1/8
16	750	660	1219	839	750	1219	20	1-1/4
18	731	647	1219	815	731	1219	24	1-1/4
20	845	751	1219	940	845	1219	24	1-1/4
24	1357	1213	2213	1501	1357	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.