Diaphragm Seal Bolt Torque Values Tech Brief

REOTEMP

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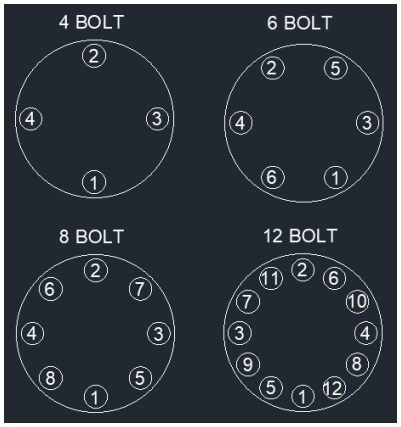
The following chart lists the appropriate torque values for bolts used within a Reotemp diaphragm seal that join two housing together. All Reotemp diaphragm seals will arrive with these bolts already tightened to these specifications. A user will only need to reference this chart in the event they loosen or disassemble a diaphragm seal for the purpose of cleaning, gasket replacement, or other repair/inspection.
This chart does not depict the bolt specification or torque value for the joining of the diaphragm seal to the process piping. Please refer to ANSI, ASME, or the appropriate specification that the flanged or threaded process connection was manufactured to fit for installation and operating instructions.

Seal Type	Bolt Size	Number of Bolts
W51	3/8-16	4
W5K	3/8-16	8
W5H	1/2-13	8
W61	3/8-16	8
W6M	1/2-13	8
W6H	5/8-11	8
W71	3/8-16	8
W7N	5/8-11	8
W7H	7/8-9	8
W52	3/8-16	4
W62	3/8-16	8
W72	3/8-16	8
W545	5/16-24	8
W550	5/16-24	8
W575	5/16-24	8



Diaphragm Seal Fastener Torque Table (ETB012.X01)

Bolt Size	Bolt Material Code	Material Desc.	Initial Stage	1st Stage	2nd Stage	Final Torque
1/4-28unf	8	A354 Gr. BD (Grade 8 Steel)	Hand Tight (2)	60 [in/lbs] (2)	-	125 [in/lbs] (2)
5/16-18unc	8	A354 Gr. BD (Grade 8 Steel)	Hand Tight (2)	60 [in/lbs] (2)	-	225 [in/lbs] (2)
5/16-18unc	N	A193 Gr. B7M (Steel NACE)	Hand Tight (2)	60 [in/lbs] (2)	-	195 [in/lbs] (2)
5/16-18unc	S,T	A193 Gr. B8M CL1, B8 (316SS, 18-8 304SS)	Hand Tight (2)	60 [in/lbs] (2)	-	120 [in/lbs] (2)
5/16-18unc	7	A193 B8M CL. 2 SH (316 Strain Hardened)	Hand Tight (2)	60 [in/lbs] (2)	-	195 [in/lbs] (2)
5/16-24unf	8	A354 Gr. BD (Grade 8 Steel)	Hand Tight (2)	60 [in/lbs] (2)	-	250 [in/lbs] (2)
5/16-24unf	N	A193 Gr. B7M (Steel NACE)	Hand Tight (2)	60 [in/lbs] (2)	-	215 [in/lbs] (2)
5/16-24unf	S,T	A193 Gr. B8M CL1, B8 (316SS, 18-8 304SS)	Hand Tight (2)	60 [in/lbs] (2)	-	135 [in/lbs] (2)
5/16-24unf	7	A193 B8M CL. 2 SH (316 Strain Hardened)	Hand Tight (2)	60 [in/lbs] (2)	-	215 [in/lbs] (2)
3/8-16unc	8	A354 Gr. BD (Grade 8 Steel)	Hand Tight (2)	10 [Ft/lbs] (2)	20 [Ft/lbs]	35 [Ft/lbs]
3/8-16unc	N	A193 Gr. B7M (Steel NACE)	Hand Tight (2)	10 [Ft/lbs] (2)	-	30 [Ft/lbs]
3/8-16unc (3)	S,T	A193 Gr. B8M CL1, B8 (316SS, 18-8 304SS)	Hand Tight (2)	10 [Ft/lbs] (2)	-	18 [Ft/lbs]
3/8-16unc	7	A193 B8M CL. 2 SH (316 Strain Hardened)	Hand Tight (2)	10 [Ft/lbs] (2)	-	30 [Ft/lbs]
3/8-24unf	8	A354 Gr. BD (Grade 8 Steel)	Hand Tight (2)	10 [Ft/lbs] (2)	20 [Ft/lbs]	40 [Ft/lbs]
3/8-24unf	N	A193 Gr. B7M (Steel NACE)	Hand Tight (2)	10 [Ft/lbs] (2)	20 [Ft/lbs]	35 [Ft/lbs]
3/8-24unf	S,T	A193 Gr. B8M CL1, B8 (316SS, 18-8 304SS)	Hand Tight (2)	10 [Ft/lbs] (2)	-	20 [Ft/lbs]
3/8-24unf	7	A193 B8M CL. 2 SH (316 Strain Hardened)	Hand Tight (2)	10 [Ft/lbs] (2)	20 [Ft/lbs]	35 [Ft/lbs]
1/2-13unc	8	A354 Gr. BD (Grade 8 Steel)	Hand Tight (2)	10 [Ft/lbs] (2)	40 [Ft/lbs]	80 [Ft/lbs]
1/2-13unc	N	A193 Gr. B7M (Steel NACE)	Hand Tight (2)	10 [Ft/lbs] (2)	35 [Ft/lbs]	70 [Ft/lbs]
1/2-13unc	S,T	A193 Gr. B8M CL1, B8 (316SS, 18-8 304SS)	Hand Tight (2)	10 [Ft/lbs] (2)	25 [Ft/lbs]	45 [Ft/lbs]
1/2-13unc	7	A193 B8M CL. 2 SH (316 Strain Hardened)	Hand Tight (2)	10 [Ft/lbs] (2)	35 [Ft/lbs]	70 [Ft/lbs]
9/16-18unf	8	A354 Gr. BD (Grade 8 Steel)	Hand Tight (2)	10 [Ft/lbs] (2)	65 [Ft/lbs]	130 [Ft/lbs]
9/16-18unf	N	A193 Gr. B7M (Steel NACE)	Hand Tight (2)	10 [Ft/lbs] (2)	55 [Ft/lbs]	115 [Ft/lbs]
9/16-18unf	S,T	A193 Gr. B8M CL1, B8 (316SS, 18-8 304SS)	Hand Tight (2)	10 [Ft/lbs] (2)	35 [Ft/lbs]	70 [Ft/lbs]
9/16-18unf	7	A193 B8M CL. 2 SH (316 Strain Hardened)	Hand Tight (2)	10 [Ft/lbs] (2)	55 [Ft/lbs]	115 [Ft/lbs]
5/8-11unc	8	A354 Gr. BD (Grade 8 Steel)	Hand Tight (2)	10 [Ft/lbs] (2)	80 [Ft/lbs]	160 [Ft/lbs]
5/8-11unc	N	A193 Gr. B7M (Steel NACE)	Hand Tight (2)	10 [Ft/lbs] (2)	70 [Ft/lbs]	140 [Ft/lbs]
5/8-11unc	S,T	A193 Gr. B8M CL1, B8 (316SS, 18-8 304SS)	Hand Tight (2)	10 [Ft/lbs] (2)	45 [Ft/lbs]	90 [Ft/lbs]
5/8-11unc	7	A193 B8M CL. 2 SH (316 Strain Hardened)	Hand Tight (2)	10 [Ft/lbs] (2)	70 [Ft/lbs]	140 [Ft/lbs]
7/8-9unc	8	A354 Gr. BD (Grade 8 Steel)	Hand Tight (2)	20 [Ft/lbs] (2)	200 [Ft/lbs]	400 [Ft/lbs]
7/8-9unc	N	A193 Gr. B7M (Steel NACE)	Hand Tight (2)	20 [Ft/lbs] (2)	175 [Ft/lbs]	350 [Ft/lbs]
7/8-9unc	S,T	A193 Gr. B8M CL1, B8 (316SS, 18-8 304SS)	Hand Tight (2)	20 [Ft/lbs] (2)	90 [Ft/lbs]	185 [Ft/lbs]
7/8-9unc	7	A193 B8M CL. 2 SH (316 Strain Hardened)	Hand Tight (2)	20 [Ft/lbs] (2)	175 [Ft/lbs]	350 [Ft/lbs]

General Guidelines

1. Anti-Seize should be used on all threads regardless of fastener material.
2. The Initial Torque Stage is intended for even loading of the gasket. After all fasteners are hand tight, each bolt should be rotated a 1/4 turn in a star pattern (pictured below) until the "1st Stage" torque is achieved for each fastener before proceeding to the "2nd Stage" or "Final Torque".
3. For all Non-Metallic lower designs, the torque should follow the specs of a 3/8-16unc bolt in material codes S,T regardless of fastener material and size. This will result in a final torque value of 18 [Ft/lbs].