



Petrochemical Tightening Torque

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Tightening Torques

PETROCHEMICAL STUD BOLTS - GUIDE TO TIGHTENING (lbf.ft) SEE NOTE

Nominal Size	TPI	Stress Area	Grade	Grade	Grade	Grade	Grade	Grade
		(in ²)	B7	B16	L7	B8/B8M CI1	B8 CI2	B8M CI2
1/4"UNC	20	0.031	9	9	9	3	9	8
5/16"UNC	18	0.052	19	19	19	5	18	17
3/8"UNC	16	0.077	33	33	33	9	31	30
7/16"UNC	14	0.106	53	53	53	15	50	48
1/2"UNC	13	0.141	81	81	81	23	77	74
9/16"UNC	12	0.182	116	116	116	33	111	106
5/8"UNC	11	0.226	161	161	161	46	153	147
3/4"UNC	10	0.334	285	285	285	81	271	261
7/8"UNC	9	0.462	460	460	460	131	350	350
1"UNC	8	0.606	689	689	689	197	525	525
1-1/8"UN8	8	0.790	1011	1011	1011	289	626	626
1-1/4"UN8	8	1.000	1422	1422	1422	406	880	880
1-3/8"UN8	8	1.233	1928	1928	1928	551	918	918
1-1/2"UN8	8	1.492	2546	2546	2546	727	1212	1212
1-5/8"UN8	8	1.780	3290	3290	3290	940	-	-
1-3/4"UN8	8	2.080	4141	4141	4141	1183	-	-
1-7/8"UN8	8	2.410	5140	5140	5140	1469	-	-
2"UN8	8	2.770	6302	6302	6302	1801	-	-
2-1/4"UN8	8	3.560	9111	9111	9111	2603	-	-
2-1/2"UN8	8	4.440	12626	12626	12626	3608	-	-
2-3/4"UN8	8	5.430	15368	15368	16986	4853	-	-
3"UN8	8	6.510	20100	20100	22215	6347	-	-
3-1/4"UN8	8	7.690	25721	25721	28429	8123	-	-
3-1/2"UN8	8	8.960	32275	32275	35672	10192	-	-
3-3/4"UN8	8	10.340	39906	39906	44107	12602	-	-
4"UN8	8	11.810	48618	48618	53736	15353	-	-

k Factor = 0.2

The induced load is calculated at 65% yield stress



Note:

Stud bolts are most widely used for flange bolting on piping carrying fluids of various kinds over a range of temperatures and pressures. Furthermore, a wide selection of gasket materials of varying properties is available for selection by design engineers. Normally, the pressure on gaskets required to be developed from the tightening of bolts only needs to be sufficient to prevent any risk of leakage under all possible operating conditions. Since there is a range of differing flange types to select from, a mix of variations in gasket types to cover all conditions possible and a spread of operating temperatures to be allowed for, standards for the tightening of pipe flange stud bolts can really only be specified by engineers from within the particular industry in which these fasteners are used. The tightening torque values given in the above table therefore, serve only as a guide in cases where stud bolts might be selected for use simply as tension fasteners clamping metal-metal joint surfaces directly one to the other, as is the case with most normal high tensile hex head bolting. A k factor of 0.2 has been used which assumes threads are burr free and a light oil coating. Stainless fasteners that are not lubricated or coated often seize and can exhibit k factors in excess of 0.35.

Bolt Tension | Anti-Vibration | Product Reliability | Traceability

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