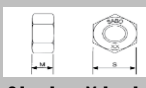


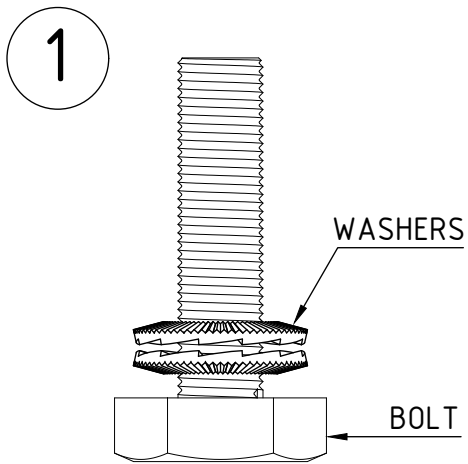


Torque and Target Preload by Bolt Size
For Different Lubrications (K-factor) using G_F 70% for different Classes of Bolt

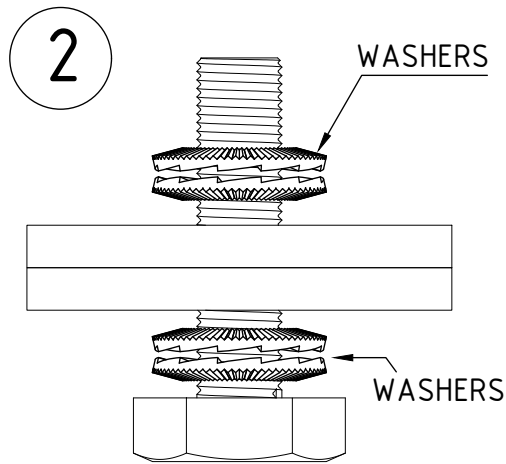
HEXAGON FULL NUTS DIN 934 / ISO 4032 Target Preload and Required Torque by Bolt Size and Property Class for Coarse Pitch at defined G _F (70%) for different lubrication scenarios (k-factor).													
			Pitch Course [mm]	G _F = 70.00%		6.8		8.8		10.9		12.9	
Bolt Size	S [mm]	M [mm]		Stress Area [mm ²]	70.00% K-factor	Preload [kN]	Torque [Nm]	Preload [kN]	Torque [Nm]	Preload [kN]	Torque [Nm]	Preload [kN]	Torque [Nm]
M10	8	17	1.50	58	0.153 0.206 0.258	18	28 37 46	24	36 48 61	34	52 69 87	39	60 81 102
M12	10	19	1.75	84	0.153 0.206 0.258	26	48 64 80	34	63 85 106	49	90 121 152	57	105 142 177
M14	11	22	2.00	115	0.153 0.206 0.258	35	75 101 126	47	100 135 169	67	143 193 242	78	167 225 282
M16	13	24	2.00	157	0.153 0.206 0.258	48	118 158 198	64	156 210 263	91	223 301 377	107	261 351 440
M18	15	27	2.50	192	0.153 0.206 0.258	59	162 219 274	81	222 299 374	111	307 413 517	130	359 484 606
M20	16	30	2.50	245	0.153 0.206 0.258	76	233 313 392	103	315 424 531	142	435 586 733	166	509 685 858
M22	18	32	2.50	303	0.153 0.206 0.258	93	313 421 528	127	429 577 723	176	594 799 1001	206	693 933 1168
M24	19	36	3.00	353	0.153 0.206 0.258	109	400 539 675	148	545 733 918	205	753 1014 1270	240	880 1185 1484
M27	22	41	3.00	459	0.153 0.206 0.258	141	582 784 982	193	796 1071 1342	267	1102 1483 1858	312	1288 1734 2171
M30	24	46	3.50	561	0.153 0.206 0.258	173	794 1069 1339	236	1082 1457 1825	326	1497 2016 2525	381	1748 2353 2947
M33	26	50	3.50	694	0.153 0.206 0.258	214	1080 1455 1822	292	1472 1982 2483	399	2015 2712 3397	471	2379 3203 4011
M36	29	55	4.00	817	0.153 0.206 0.258	252	1388 1869 2341	343	1889 2544 3186	475	2614 3520 4408	555	3056 4114 5153
M39	31	60	4.00	976	0.153 0.206 0.258	301	1796 2418 3029	410	2448 3296 4127	567	3383 4555 5705	663	3956 5326 6670
M42	34	65	4.50	1120	0.153 0.206 0.258	345	2217 2985 3738	470	3023 4070 5097	651	4181 5630 7051	761	4887 6580 8241
M45	36	70	4.50	1310	0.153 0.206 0.258	404	2782 3745 4690	550	3788 5100 6388	761	5240 7055 8836	890	6124 8246 10327
M48	38	75	5.00	1470	0.153 0.206 0.258	453	3327 4479 5610	617	4534 6105 7646	854	6273 8445 10577	998	7330 9869 12361
M52	42	80	5.00	1760	0.153 0.206 0.258	542	4312 5806 7271	739	5881 7918 9917	1023	8136 10954 13719	1195	9507 12801 16032
M56	45	85	5.50	2030	0.153 0.206 0.258	625	5355 7210 9030	853	7305 9836 12318	1179	10105 13606 17040	1378	11810 15901 19915
M60	48	90	5.50	2360	0.153 0.206 0.258	727	6674 8986 11254	991	9099 12251 15344	1371	12588 16948 21226	1602	14710 19806 24805
M64	51	95	6.00	2680	0.153 0.206 0.258	825	8078 10877 13622	1126	11022 14840 18586	1557	15247 20529 25711	1820	17819 23991 30047
M68	54	100	6.00	3060	0.153 0.206 0.258	943	9811 13210 16544	1285	13371 18003 22548	1778	18497 24905 31192	2078	21616 29104 36451
M72	58	95	6.00	3430	0.153 0.206 0.258	1056	11633 15663 19616	1441	15870 21367 26761	1993	21953 29557 37018	2329	25656 34544 43264
M76	61	95	6.00	3858	0.153 0.206 0.258	1188	13814 18599 23294	1620	18842 25369 31773	2242	26064 35093 43951	2620	30461 41013 51365
M80	64	100	6.00	4311	0.153 0.206 0.258	1328	16255 21885 27410	1811	22162 29839 37371	2505	30658 41278 51697	2927	35829 48240 60417
M85	68	120	6.00	4912	0.153 0.206 0.258	1513	19677 26493 33180	2063	26829 36123 45242	2854	37115 49972 62586	3335	43374 58399 73141
M90	72	130	6.00	5553	0.153 0.206 0.258	1710	23547 31703 39706	2332	32116 43241 54156	3226	44426 59816 74915	3771	51920 69905 87551
M95	76	135	6.00	6233	0.153 0.206 0.258	1920	27907 37574 47059	2618	38051 51232 64165	3621	52637 70871 88761	4232	61515 82824 103731
M100	80	145	6.00	6952	0.153 0.206 0.258	2141	32757 44105 55238	2920	44673 60148 75331	4039	61798 83206 104209	4720	72222 97240 121786
M105	84	140	6.00	7711	0.153 0.206 0.258	2375	38154 51371 64339	3239	52028 70051 87734	4480	71973 96905 121366	5236	84113 113250 141838
M110	88	155	6.00	8509	0.153 0.206 0.258	2621	44111 59392 74384	3574	60147 80982 101424	4944	83203 112024 140302	5778	97237 130920 163968
G _F = Ratio of yield point. When tightening according to guidelines and with no deviation, this is the pre-stress achieved expressed as % of yield point.													

PLACING SEQUENCE OF CONICAL SPRING WEDGE LOCK WASHERS

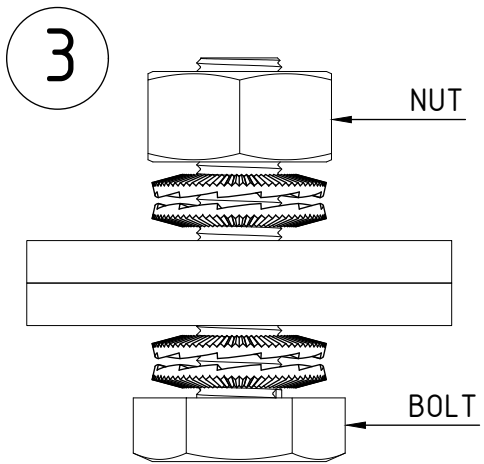
PLACE WASHER ON BOLT



INSERT BOLT & WASHERS
IN APPLICATION



PLACE NUT ON BOLT



TIGHTEN BOLT & NUT UNTIL
WASHERS ARE FLAT

