



Service Manual Supplement

SAE and Metric Fastener Torque Specifications

Rev A
July 2016

Introduction

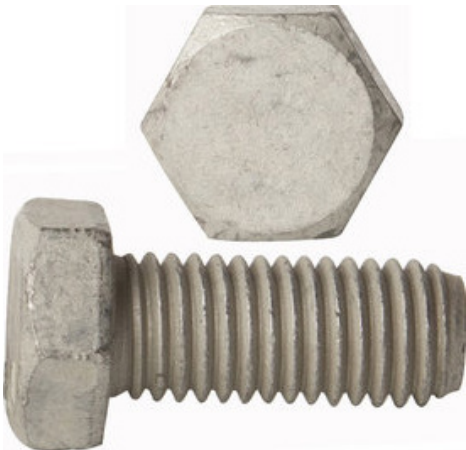
Fastener Identification



Plain fastener



Zinc plated fastener



Coated fastener

Copyright © 2016 by Terex Corporation

Rev A, July 2016

First Edition, First Printing

"Genie" is a registered trademark of Terex South Dakota, Inc. in the USA and many other countries.



Table of Contents

Introduction	Introduction.....	ii
	Fastener Identification	ii
<hr/>		
Section 1	Fastener Torque Specifications.....	3
	SAE Plain and Zinc Plated Hex and Socket Head Cap Screws	4
	Metric Plain and Zinc Plated Hex and Socket Head Cap Screws	8
	SAE Coated Hex Head and Socket Head Cap Screws Mated with Plain or Zinc Plated Threads.....	9
	SAE Coated Hex Head and Socket Head Cap Screws Mated with Coated Threads	13
	SAE Coated Hex Head Flange Screws Mated with Plain or Zinc Plated Threads.....	17
	Metric Coated Hex Head and Socket Head Cap Screws Mated with Plain or Zinc Plated Threads.....	21
	Metric Coated Hex Head and Socket Head Cap Screws Mated with Coated Threads	23
	Metric Coated Hex Head Flange Screws Mated with Plain or Zinc Plated Threads.....	25

Fastener Torque Specifications

TORQUE CHART - SAE PLAIN AND ZINC PLATED HEX HEAD AND SOCKET HEAD CAP SCREWS									
		Grade 2 or 5 hex head with Grade A nut				Grade 5 hex head with Grade 5 or higher nut			
		DRY		LUBED		DRY		LUBED	
SIZE	THREAD	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm
4	40	6	0.7	4	0.5	----	----	----	----
	48	6	0.7	5	0.6	----	----	----	----
6	32	10	1.1	8	0.9	----	----	----	----
	40	12	1.4	9	1	----	----	----	----
8	32	19	2.1	14	1.6	----	----	----	----
	36	20	2.2	15	1.7	----	----	----	----
10	24	27	3	21	2.4	----	----	----	----
	32	32	3.6	24	2.7	----	----	----	----
1/4	20	66	7.5	49	5.5	100	11.3	76	8.6
	28	75	8.5	56	6.3	120	13.6	87	9.8
		ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm
5/16	18	11	15	8	11	17	23	13	17
	24	12	16	9	12	19	25.5	14	19
3/8	16	20	27	15	20	31	42	23	31
	24	23	31	17	23	35	47.5	26	35
7/16	14	32	43	24	32	49	66.5	37	50
	20	36	49	27	36	55	74.5	41	55
1/2	13	49	66.5	37	50	75	101.5	57	77
	20	55	74.5	41	55	85	115	64	86

Fastener Torque Specifications

TORQUE CHART - SAE PLAIN AND ZINC PLATED HEX HEAD AND SOCKET HEAD CAP SCREWS									
		Grade 2 or 5 hex head with Grade A nut				Grade 5 hex head with Grade 5 or higher nut			
		DRY		LUBED		DRY		LUBED	
SIZE	THREAD	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm
9/16	12	70	95	53	72	110	149	80	108.5
	18	78	105.5	59	80	120	162.5	90	122
5/8	11	100	135.5	73	99	150	203.5	110	149
	18	110	149	83	112	170	230.5	130	176
3/4	10	170	230.5	130	176	270	366	200	271
	16	190	257.5	140	190	300	406.5	220	298
7/8	9	280	379.5	210	284.5	430	583	320	434
	14	310	420.5	230	312	470	637	350	474.5
1	8	420	569.5	310	420.5	640	867.5	480	651
	12	460	623.5	340	461	710	962.5	530	718.5
1 1/8	7	590	800	440	596.5	790	1071	590	800
	12	660	895	500	678	890	1206.5	670	908.5
1 1/4	7	830	1125.5	630	854	1120	1518.5	840	1139
	12	920	1247.5	690	935.5	1240	1681	930	1261
1 1/2	6	1450	1966	1090	1478	1950	2644	1460	1979.5
	12	1630	2210	1220	1654	2190	2969	1640	2223.5

Fastener Torque Specifications

TORQUE CHART - SAE PLAIN AND ZINC PLATED HEX HEAD AND SOCKET HEAD CAP SCREWS						BLACK OXIDE BOLTS, SHC		
		Grade 8 hex head				ASTM A574 - ANSI B18.3		
		DRY		LUBED		DRY	LUBED	
SIZE	THREAD	in-lbs	Nm	in-lbs	Nm		in-lbs	Nm
4	40	----	----	----	----	N O T R E C O M M E N D E D	11	1.2
	48	----	----	----	----		12	1.4
6	32	----	----	----	----		20	2.3
	40	----	----	----	----		22	2.5
8	32	----	----	----	----		36	4
	36	----	----	----	----		38	4.3
10	24	----	----	----	----		52	5.9
	32	----	----	----	----		60	6.8
1/4	20	140	15.8	110	12.4		130	14.7
	28	160	18	160	18		140	15.8
		ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	
5/16	18	25	34	18	24	21	28	
	24	27	36	20	27	24	32	
3/8	16	44	59	33	44.5	38	51	
	24	49	66.5	37	50	43	58.5	
7/16	14	70	95	50	68	61	82.5	
	20	80	108.5	60	81.5	68	92	
1/2	13	110	149	80	108.5	93	126	
	20	120	162.5	90	122	105	142.5	

Fastener Torque Specifications

TORQUE CHART - SAE PLAIN AND ZINC PLATED HEX HEAD AND SOCKET HEAD CAP SCREWS						BLACK OXIDE BOLTS, SHC		
		Grade 8 hex head				ASTM A574 - ANSI B18.3		
		DRY		LUBED		DRY	LUBED	
SIZE	THREAD	ft-lbs	Nm	ft-lbs	Nm		ft-lbs	Nm
9/16	12	150	203.5	120	162.5	N	130	176
	18	170	230.5	130	176		O	140
5/8	11	210	284.5	160	217	T	180	244
	18	240	325.5	180	244			200
3/4	10	380	515	280	379.5	R	320	434
	16	420	569.5	310	420.5		E	350
7/8	9	610	827	450	610	C	510	691.5
	14	670	908.5	500	678		O	560
1	8	910	1234	680	922	M	770	1044
	12	990	1342	750	1017		M	840
1 1/8	7	1290	1749	970	1315	E	1090	1478
	12	1440	1952.5	1080	1464		N	1220
1 1/4	7	1820	2467.5	1360	1844	D	1530	2074.5
	12	2010	2725	1510	2047		E	1700
1 1/2	6	3160	4284.5	2370	3213	D	2670	3620
	12	3560	4826.5	2670	3620			3000



Fastener Torque Specifications

TORQUE CHART - METRIC PLAIN AND ZINC PLATED HEX HEAD AND SOCKET HEAD CAP SCREWS									
		Class 4.6 hex head cap screw				Class 8.8 hex head cap screw			
		DRY		LUBED		DRY		LUBED	
SIZE	THREAD	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs
M3	0.5	----	----	----	----	----	----	----	----
M3.5	0.6	----	----	----	----	----	----	----	----
M4	0.7	----	----	----	----	----	----	----	----
M5	0.8	2.5	22	2	17.5	6	53	4.5	40
M6	1	4	35.5	3	26.5	10.5	93	8	71
M7	1	7	62	5	44	17.5	155	13	115
M8	1.25	10	88.5	7.5	66.5	25.5	225.5	19	168
		Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs
M10	1.5	19.5	14.5	14.5	10.5	50.5	37	38	28
M12	1.75	34	25	25.5	19	88	65	66	48.5
M14	2	54.5	40	41	30	140	103	105	77.5
M16	2	85	62.5	63.5	47	226	166.5	170	125.5
M18	2.5	117	86	87.5	64.5	311	229.5	233	172
M20	2.5	165	121.5	124	91.5	441	325	330	243.5
M22	2.5	225	166	169	124.5	600	442.5	450	332
M24	3	285	210	214	158	762	562	570	420.5
M27	3	418	308.5	314	231.5	1115	822.5	837	617.5
M30	3.5	568	419	426	314	1515	1117.5	1136	838
M33	3.5	773	570	580	428	2061	1520	1546	1140.5
M36	4	993	732.5	745	549.5	2647	1952.5	1985	1464

Fastener Torque Specifications

TORQUE CHART - METRIC PLAIN AND ZINC PLATED HEX HEAD AND SOCKET HEAD CAP SCREWS									
		Class 10.9 hex head cap screw				Class 12.9 hex head cap screw			
		DRY		LUBED		DRY		LUBED	
SIZE	THREAD	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs
M3	0.5	----	----	----	----	2	17.5	1.5	13
M3.5	0.6	----	----	----	----	3.5	31	2.5	22
M4	0.7	----	----	----	----	5	44	4	35.5
M5	0.8	9	79.5	6.5	57.5	10.5	93	7.5	66.5
M6	1	15	132.5	11.5	102	17.5	155	13	115
M7	1	25	221	19	168	29.5	261	22	194.5
M8	1.25	36.5	323	27.5	243.5	42.5	376	32	283
		Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs
M10	1.5	72	53	54	40	84.5	62.5	63.5	47
M12	1.75	125	92	94.5	69.5	147	108.5	110	81
M14	2	200	147.5	150	110.5	234	172.5	175	129
M16	2	313	231	235	173.5	365	269	274	202
M18	2.5	430	317	323	238	503	371	377	278
M20	2.5	610	450	458	338	713	526	535	394.5
M22	2.5	830	612	622	459	970	715.5	727	536
M24	3	1055	778	791	583.5	1233	909.5	925	682
M27	3	1543	1138	1157	853.5	1803	1330	1352	997
M30	3.5	2095	1545	1572	1159.5	2450	1807	1837	1355
M33	3.5	2851	2103	2138	1577	3332	2457.5	2500	1844
M36	4	3662	2701	2746	2025.5	4279	3156	3210	2367.5

Fastener Torque Specifications

TORQUE CHART - SAE COATED HEX HEAD AND SOCKET HEAD CAP SCREWS MATED WITH PLAIN OR ZINC PLATED THREADS													
		Grade A or 2 hex head with Grade A or 2 nut						Grade 5 hex head with Grade 5, F or higher nut					
		DRY		THREAD LOCKER		LUBED		DRY		THREAD LOCKER		LUBED	
SIZE	THREAD	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm
4	40	6	1	5	0.5	4	0.5	----	----	----	----	----	----
	48	6	1	5	0.5	5	0.5	----	----	----	----	----	----
6	32	11	1	9	1	8	1	----	----	----	----	----	----
	40	12	1.5	10	1	9	1	----	----	----	----	----	----
8	32	20	2.5	17	2	14	1.5	----	----	----	----	----	----
	36	21	2.5	18	2	15	1.5	----	----	----	----	----	----
10	24	29	3.5	25	3	21	2.5	----	----	----	----	----	----
	32	33	3.5	28	3	24	2.5	----	----	----	----	----	----
1/4	20	69	8	59	6.5	49	5.5	107	12	91	10.5	76	9
	28	79	9	68	7.5	56	6.5	122	14	104	12	87	10
		ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm
5/16	18	12	16	10	13	8	11	18	24	16	21	13	17
	24	13	17	11	15	9	12	20	27	17	23	14	19
3/8	16	21	28	18	24	15	20	32	43	28	38	23	31
	24	24	32	20	27	17	23	37	50	32	43	26	35
7/16	14	34	46	29	39	24	32	52	70	44	59	37	50
	20	38	51	32	43	27	36	58	78	50	68	41	55
1/2	13	51	69	44	59	37	50	79	107	68	92	57	77
	20	58	78	50	68	41	55	89	120	77	104	64	86

Fastener Torque Specifications

TORQUE CHART - SAE COATED HEX HEAD AND SOCKET HEAD CAP SCREWS MATED WITH PLAIN OR ZINC PLATED THREADS													
		Grade A or 2 hex head with Grade A or 2 nut						Grade 5 hex head with Grade 5, F or higher nut					
		DRY		THREAD LOCKER		LUBED		DRY		THREAD LOCKER		LUBED	
SIZE	THREAD	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm
9/16	12	74	100	63	85	53	72	114	154	98	133	82	111
	18	82	111	71	96	59	80	127	172	109	147	91	123
5/8	11	102	138	87	118	73	99	158	214	135	183	113	153
	18	116	157	99	134	83	112	178	241	153	207	127	172
3/4	10	181	245	155	210	129	175	280	379	240	325	200	271
	16	202	274	173	234	144	195	312	423	268	363	223	302
7/8	9	292	396	251	340	209	283	452	613	387	524	323	438
	14	322	436	276	374	230	312	496	672	425	576	354	480
1	8	438	594	375	508	313	424	676	916	579	785	483	655
	12	478	648	410	556	341	462	740	1003	635	861	529	717
1 1/8	7	620	840	532	721	443	600	833	1129	714	968	595	806
	12	695	942	596	808	496	672	935	1267	802	1087	668	905
1 1/4	7	875	1186	750	1017	625	847	1177	1596	1009	1368	841	1140
	12	969	1313	831	1126	692	938	1304	1768	1118	1516	931	1262
1 1/2	6	1523	2065	1305	1769	1088	1475	2048	2776	1755	2379	1463	1983
	12	1712	2321	1467	1989	1223	1658	2302	3121	1973	2675	1644	2229

Fastener Torque Specifications

TORQUE CHART - SAE COATED HEX HEAD AND SOCKET HEAD CAP SCREWS MATED WITH PLAIN OR ZINC PLATED THREADS													
		Grade 8 hex head with Grade 8,G, or C nut						ASTM A574 Socket head cap screw					
		DRY		THREAD LOCKER		LUBED		DRY		THREAD LOCKER		LUBED	
SIZE	THREAD	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm
4	40	----	----	----	----	----	----	15	1.5	13	1.5	11	1
	48	----	----	----	----	----	----	16	2	14	1.5	12	1.5
6	32	----	----	----	----	----	----	28	3	24	2.5	20	2.5
	40	----	----	----	----	----	----	31	3.5	27	3	22	2.5
8	32	----	----	----	----	----	----	51	6	43	5	36	4
	36	----	----	----	----	----	----	53	6	46	5	38	4.5
10	24	----	----	----	----	----	----	73	8	63	7	52	6
	32	----	----	----	----	----	----	84	9.5	72	8	60	7
1/4	20	150	17	129	14.5	107	12	175	20	150	17	125	14
	28	172	19.5	148	16.5	123	14	201	22.5	172	19.5	143	16
		ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm
5/16	18	26	35	22	30	18	24	30	40	26	35	21	28
	24	29	39	24	32.5	20	27	33	44	29	39	24	32
3/8	16	46	62	39	53	33	44	53	72	46	62	38	51
	24	52	70	44	59	37	50	61	82	52	70	43	58
7/16	14	73	99	63	85	52	70	85	115	73	99	61	82
	20	82	111	70	95	58	78.5	95	129	82	111	68	92
1/2	13	112	151	96	130	80	108	130	176	112	151	93	126
	20	126	171	108	146	90	122	147	199	126	171	105	142

Fastener Torque Specifications

TORQUE CHART - SAE COATED HEX HEAD AND SOCKET HEAD CAP SCREWS MATED WITH PLAIN OR ZINC PLATED THREADS													
		Grade 8 hex head with Grade 8,G, or C nut						ASTM A574 Socket head cap screw					
		DRY		THREAD LOCKER		LUBED		DRY		THREAD LOCKER		LUBED	
SIZE	THREAD	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm
9/16	12	161	218	138	187	115	156	181	245	156	211	130	176
	18	180	244	154	208	128	173	202	274	173	234	144	195
5/8	11	222	301	191	259	159	215	250	339	215	291	179	242
	18	252	341	216	293	180	244	284	385	243	329	203	275
3/4	10	395	535	338	458	282	382	444	602	380	515	317	429
	16	441	598	378	512	315	427	496	672	425	576	354	480
7/8	9	637	863	546	740	455	617	716	970	614	832	512	694
	14	701	950	601	815	501	679	789	1069	676	916	564	764
1	8	954	1293	818	1109	682	924	1074	1456	920	1247	767	1040
	12	1044	1415	895	1213	746	1011	1175	1593	1007	1365	839	1137
1 1/8	7	1352	1833	1159	1571	966	1309	1521	2062	1304	1768	1086	1472
	12	1517	2056	1300	1762	1083	1468	1706	2313	1463	1983	1219	1652
1 1/4	7	1908	2587	1635	2216	1363	1848	2146	2909	1840	2494	1533	2078
	12	2112	2863	1811	2455	1509	2046	2376	3221	2036	2760	1697	2301
1 1/2	6	3319	4500	2845	3857	2371	3214	3735	5064	3202	4341	2668	3617
	12	3733	5061	3200	4338	2666	3614	4200	5694	3600	4881	3000	4067

Fastener Torque Specifications

TORQUE CHART - SAE COATED HEX HEAD AND SOCKET HEAD CAP SCREWS MATED WITH COATED THREADS													
		Grade A or 2 hex head with Grade A or 2 nut						Grade 5 hex head with Grade 5, F or higher nut					
		DRY		THREAD LOCKER		LUBED		DRY		THREAD LOCKER		LUBED	
SIZE	THREAD	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm
4	40	5	0.5	5	0.5	4	0.5	----	----	----	----	----	----
	48	6	1	5	0.5	5	0.5	----	----	----	----	----	----
6	32	10	1	9	1	8	1	----	----	----	----	----	----
	40	11	1	10	1	9	1	----	----	----	----	----	----
8	32	18	2	16	2	14	1.5	----	----	----	----	----	----
	36	19	2	17	2	15	1.5	----	----	----	----	----	----
10	24	26	3	23	2.5	21	2.5	----	----	----	----	----	----
	32	30	3.5	27	3	24	2.5	----	----	----	----	----	----
1/4	20	62	7	56	6.5	49	5.5	96	11	86	9.5	76	9
	28	71	8	64	7	56	6.5	110	12.5	99	11	87	10
		ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm
5/16	18	11	15	10	13	8	11	17	23	15	20	13	17
	24	12	20	11	15	9	12	18	24	16	21	14	19
3/8	16	19	25	17	23	15	20	29	39	26	35	23	31
	24	21	28	19	25	17	23	33	44	30	40	26	35
7/16	14	30	40	27	36	24	32	47	63	42	57	37	50
	20	34	46	30	40	27	36	52	70	47	63	41	55
1/2	13	46	62	41	55	37	50	72	97	64	86	57	77
	20	52	70	47	63	41	55	81	110	72	97	64	86

Fastener Torque Specifications

TORQUE CHART - SAE COATED HEX HEAD AND SOCKET HEAD CAP SCREWS MATED WITH COATED THREADS													
		Grade A or 2 hex head with Grade A or 2 nut						Grade 5 hex head with Grade 5, F or higher nut					
		DRY		THREAD LOCKER		LUBED		DRY		THREAD LOCKER		LUBED	
SIZE	THREAD	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm
9/16	12	67	91	60	81	53	72	103	139	92	124	82	111
	18	75	101	67	91	59	80	115	156	103	139	91	123
5/8	11	92	124	83	112	73	99	143	194	128	173	113	153
	18	105	142	94	127	83	112	161	218	144	195	127	172
3/4	10	164	222	147	199	129	175	253	343	226	306	200	271
	16	183	248	164	222	144	195	283	383	253	343	223	302
7/8	9	265	359	237	321	209	283	409	554	366	496	323	438
	14	291	394	260	352	230	312	449	608	402	545	354	480
1	8	396	537	354	480	313	424	611	828	547	741	483	655
	12	432	585	387	524	341	462	670	908	599	812	529	717
1 1/8	7	561	760	502	680	443	600	753	1021	674	914	595	806
	12	629	853	563	763	496	672	846	1147	757	1026	668	905
1 1/4	7	792	1074	708	960	625	847	1065	1444	953	1292	841	1140
	12	877	1189	784	1063	692	938	1180	1600	1055	1430	931	1262
1 1/2	6	1378	1868	1233	1671	1088	1475	1853	2512	1658	2248	1463	1983
	12	1549	2100	1386	1879	1223	1658	2083	2824	1864	2527	1644	2229

Fastener Torque Specifications

TORQUE CHART - SAE COATED HEX HEAD AND SOCKET HEAD CAP SCREWS MATED WITH COATED THREADS													
		Grade 8 hex head with Grade 8,G, or C nut						ASTM A574 Socket head cap screw					
		DRY		THREAD LOCKER		LUBED		DRY		THREAD LOCKER		LUBED	
SIZE	THREAD	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm
4	40	----	----	----	----	----	----	13	1.5	12	1.5	11	1
	48	----	----	----	----	----	----	15	2	13	1.5	12	1.5
6	32	----	----	----	----	----	----	25	3	22	2.5	20	2.5
	40	----	----	----	----	----	----	28	3.5	25	3	22	2.5
8	32	----	----	----	----	----	----	46	6	41	4.5	36	4
	36	----	----	----	----	----	----	48	6	43	5	38	4.5
10	24	----	----	----	----	----	----	66	8	59	6.5	52	6
	32	----	----	----	----	----	----	76	9.5	68	7.5	60	7
1/4	20	136	15.5	122	14	107	12	159	20	142	16	125	14
	28	156	17.5	139	15.5	123	14	181	22.5	162	18.5	143	16
		ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm
5/16	18	23	31	21	28	18	24	27	36	24	32	21	28
	24	26	35	23	31	20	27	30	40	27	36	24	32
3/8	16	41	55	37	50	33	44	48	65	43	58	38	51
	24	47	63	42	57	37	50	55	74	49	66	43	58
7/16	14	66	89	59	80	52	70	77	104	69	93	61	82
	20	74	100	66	89	58	78	86	116	77	104	68	92
1/2	13	101	137	90	122	80	108	118	160	106	143	93	126
	20	114	154	102	138	90	122	133	180	119	161	105	142



Fastener Torque Specifications

TORQUE CHART - SAE COATED HEX HEAD AND SOCKET HEAD CAP SCREWS MATED WITH COATED THREADS													
		Grade 8 hex head with Grade 8,G, or C nut						ASTM A574 Socket head cap screw					
		DRY		THREAD LOCKER		LUBED		DRY		THREAD LOCKER		LUBED	
SIZE	THREAD	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm
9/16	12	146	198	131	177	115	156	164	222	147	199	130	176
	18	163	221	146	198	128	173	183	248	164	222	144	195
5/8	11	201	272	180	244	159	215	226	306	203	275	179	242
	18	228	309	204	276	180	244	257	348	230	312	203	275
3/4	10	357	484	319	432	282	382	402	545	359	486	317	429
	16	399	541	357	484	315	427	449	608	401	543	354	480
7/8	9	576	781	515	698	455	617	648	878	580	786	512	694
	14	635	861	568	770	501	679	714	968	639	866	564	764
1	8	864	1171	773	1048	682	924	972	1318	869	1178	767	1040
	12	945	1281	845	1145	746	1011	1063	1441	951	1289	839	1137
1 1/8	7	1223	1658	1094	1483	966	1309	1376	1865	1231	1669	1086	1472
	12	1372	1860	1228	1665	1083	1468	1544	2093	1381	1872	1219	1652
1 1/4	7	1726	2340	1544	2093	1363	1848	1942	2633	1737	2355	1533	2078
	12	1911	2591	1710	2318	1509	2046	2149	2913	1923	2607	1697	2301
1 1/2	6	3003	4071	2687	3643	2371	3214	3380	4582	3024	4100	2668	3617
	12	3377	4578	3022	4097	2666	3614	3800	5152	3400	4609	3000	4067

Fastener Torque Specifications

TORQUE CHART - SAE COATED FLANGE SCREWS MATED WITH PLAIN OR ZINC PLATED THREADS													
		Grade A or 2 hex head with Grade A or 2 nut						Grade 5 hex head with Grade 5, F or higher nut					
		DRY		THREAD LOCKER		LUBED		DRY		THREAD LOCKER		LUBED	
SIZE	THREAD	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm
4	40	9	1	8	1	6	.5	----	----	----	----	----	----
	48	9	1	8	1	6	.5	----	----	----	----	----	----
6	32	16	2	14	1.5	10	1	----	----	----	----	----	----
	40	18	2	16	2	12	1.5	----	----	----	----	----	----
8	32	29	3.5	26	3	19	2	----	----	----	----	----	----
	36	31	3.5	27	3	20	2.5	----	----	----	----	----	----
10	24	42	4.5	37	4	27	3	----	----	----	----	----	----
	32	49	5.5	43	5	32	3.5	----	----	----	----	----	----
1/4	20	102	11.5	88	1	66	8	157	17.5	137	14.5	102	11.5
	28	116	13.5	101	11.5	75	8.5	180	20.5	157	17.5	116	13.5
		ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm
5/16	18	17	23	15	20	11	15	27	36	23	31	17	23
	24	19	25	17	23	12	20	30	40	26	35	19	25
3/8	16	31	42	27	36	20	27	48	65	42	57	31	42
	24	35	47	31	42	23	31	54	73	47	63	35	47
7/16	14	50	68	43	58	32	43	77	104	67	91	49	66
	20	55	74	48	65	36	49	86	116	75	101	55	74
1/2	13	76	103	66	89	49	66	117	158	102	138	75	101
	20	85	115	74	100	55	74	132	179	115	156	85	115

Fastener Torque Specifications

TORQUE CHART - SAE COATED FLANGE SCREWS MATED WITH PLAIN OR ZINC PLATED THREADS													
		Grade A or 2 hex head with Grade A or 2 nut						Grade 5 hex head with Grade 5, F or higher nut					
		DRY		THREAD LOCKER		LUBED		DRY		THREAD LOCKER		LUBED	
SIZE	THREAD	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm
9/16	12	109	147	95	129	70	95	169	229	147	199	109	147
	18	122	165	106	143	78	105	187	253	163	221	121	164
5/8	11	150	203	131	177	97	131	233	316	203	275	150	203
	18	171	232	149	202	110	149	263	356	229	310	170	230
3/4	10	267	362	233	316	173	234	413	560	359	486	266	360
	16	298	404	260	352	193	261	461	625	402	545	298	404
7/8	9	432	585	376	509	279	378	667	904	581	787	430	583
	14	475	644	413	560	306	415	732	992	638	865	473	641
1	8	646	876	563	763	417	565	997	1351	869	1178	643	871
	12	705	956	614	832	455	617	1093	1482	952	1290	705	956
1 1/8	7	915	1240	797	1080	591	801	1229	1666	1071	1452	793	1075
	12	1026	1391	894	1212	662	897	1380	1871	1202	1629	891	1208
1 1/4	7	1292	1751	1125	1525	833	1129	1737	2355	1513	2051	1121	1520
	12	1431	1940	1246	1689	923	1251	1925	2610	1676	2272	1242	1684
1 1/2	6	2248	3048	1958	2654	1450	1966	3023	4098	2633	3570	1950	2644
	12	2527	3426	2201	2984	1630	2210	3398	4607	2960	4013	2193	2973

Fastener Torque Specifications

TORQUE CHART - SAE COATED FLANGE SCREWS MATED WITH PLAIN OR ZINC PLATED THREADS													
		Grade 8 hex head with Grade 8, G, or C nut											
		DRY		THREAD LOCKER		LUBED							
SIZE	THREAD	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm						
4	40	---	---	---	---	---	---						
	48	---	---	---	---	---	---						
6	32	---	---	---	---	---	---						
	40	---	---	---	---	---	---						
8	32	---	---	---	---	---	---						
	36	---	---	---	---	---	---						
10	24	---	---	---	---	---	---						
	32	---	---	---	---	---	---						
1/4	20	222	25	193	22	143	16						
	28	254	28.5	221	25	164	18.5						
		ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm						
5/16	18	38	51	33	44	25	24						
	24	42	57	37	50	27	27						
3/8	16	68	92	59	80	44	44						
	24	77	104	67	91	49	50						
7/16	14	108	146	94	127	70	70						
	20	121	164	105	142	78	78						
1/2	13	165	224	144	195	106	108						
	20	186	252	162	220	120	122						



Fastener Torque Specifications

TORQUE CHART - SAE COATED FLANGE SCREWS MATED WITH PLAIN OR ZINC PLATED THREADS													
		Grade 8 hex head with Grade 8, G, or C nut											
		DRY		THREAD LOCKER		LUBED							
SIZE	THREAD	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm						
9/16	12	238	323	207	280	154	156						
	18	265	359	231	313	171	173						
5/8	11	328	445	286	388	212	215						
	18	372	504	324	439	240	244						
3/4	10	582	789	507	687	376	382						
	16	650	881	566	484	420	427						
7/8	9	940	1274	819	698	606	617						
	14	1035	1403	902	770	668	679						
1	8	1409	1910	1227	1048	909	924						
	12	1541	2089	1343	1145	995	1011						
1 1/8	7	1996	2706	1738	1483	1288	1309						
	12	2239	3035	1950	1665	1445	1468						
1 1/4	7	2816	3818	2453	2093	1817	1848						
	12	3118	4227	2716	2318	2012	2046						
1 1/2	6	4900	6643	4268	3643	3161	3214						
	12	5510	7470	4799	4097	3555	3614						



Fastener Torque Specifications

TORQUE CHART - METRIC COATED HEX HEAD AND SOCKET HEAD CAP SCREWS MATED WITH PLAIN OR ZINC PLATED THREADS													
		Class 4.6 hex head cap screw with plain threads / nut						Class 8.8 hex head cap screw with plain threads / nut					
		DRY		THREAD LOCKER		LUBED		DRY		THREAD LOCKER		LUBED	
SIZE	THREAD	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs
M3	0.5	----	----	----	----	----	----	----	----	----	----	----	----
M3.5	0.6	----	----	----	----	----	----	----	----	----	----	----	----
M4	0.7	----	----	----	----	----	----	----	----	----	----	----	----
M5	0.8	2.5	22	2	17.5	2	17.5	6.5	57.5	5.5	48.5	4.5	40
M6	1	4.5	40	3.5	31	3	26.5	11	97.5	9.5	84	8	71
M7	1	7	62	6	53	5	44	18.5	164	16	141.5	13	115
M8	1.25	10.5	93	9	79.5	7.5	66.5	26.5	234.5	23	203.5	19	168
M10	1.5	20.5	181.5	17.5	155	14.5	128.5	53	469	45.5	402.5	38	336.5
		Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs
M12	1.75	36	26.5	31	23	25.5	19	92.5	68	79	58	66	48.5
M14	2	57	42	49	36	41	30	147	108.5	126	93	105	77.5
M16	2	89	65.5	76.5	56.5	63.5	47	237	175	203	149.5	170	125.5
M18	2.5	122	90	105	77.5	87.5	64.5	327	241	280	206.5	233	172
M20	2.5	174	128	149	110	124	91.5	463	341.5	397	293	331	244
M22	2.5	238	175.5	202	149	169	124.5	630	464.5	540	398.5	450	332
M24	3	300	221	257	189.5	214	158	801	591	686	506	572	422
M27	3	439	324	376	277.5	314	231.5	1171	863.5	1004	740.5	837	617.5
M30	3.5	596	439.5	511	377	426	314	1590	1173	1363	1006	1136	838
M33	3.5	812	599	696	513	580	428	2164	1596	1855	1368	1546	1141
M36	4	1042	768.5	893	658.5	744	548.5	2779	1681	2382	1757	1985	1464

Fastener Torque Specifications

TORQUE CHART - METRIC COATED HEX HEAD AND SOCKET HEAD CAP SCREWS MATED WITH PLAIN OR ZINC PLATED THREADS													
		Class 10.9 hex head cap screw with plain threads / nut						Class 12.9 hex head cap screw with plain threads / nut					
		DRY		THREAD LOCKER		LUBED		DRY		THREAD LOCKER		LUBED	
SIZE	THREAD	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs
M3	0.5	----	----	----	----	----	----	2.5	22	2	17.5	1.5	13
M3.5	0.6	----	----	----	----	----	----	3.5	31	3	26.5	2.5	22
M4	0.7	----	----	----	----	----	----	5.5	48.5	4.5	40	4	35.5
M5	0.8	9.5	84	8	71	6.5	57.5	11	97.5	9.5	84	7.5	66.5
M6	1	16	142	13.5	119.5	11.5	102	18.5	163.5	16	142	13	115
M7	1	26.5	234.5	22.5	199	19	168	31	274.5	26.5	234.5	22	194.5
M8	1.25	38.5	340.5	33	292	27.5	243.5	44.5	394	38.5	340.5	32	283
		Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs
M10	1.5	76	56	65	48	54	40	88.5	65	76	56	63.5	47
M12	1.75	132	97.5	113	83.5	94.5	69.5	155	114.5	132	97.5	110	81
M14	2	210	155	180	133	150	110.5	246	181.5	211	155.5	176	130
M16	2	328	242	281	207	235	173.5	384	283	329	242.5	274	202
M18	2.5	452	333.5	387	285.5	323	238	528	389.5	453	334	377	278
M20	2.5	641	473	549	405	458	338	749	552.5	642	473.5	535	394.5
M22	2.5	871	642.5	747	551	622	459	1018	751	873	644	727	536
M24	3	1108	817	949	700	791	583.5	1294	954.5	1109	818	925	682
M27	3	1620	1195	1389	1025	1157	853.5	1893	1463	1623	1197	1352	997
M30	3.5	2200	1623	1886	1391	1572	1160	2571	1896	2204	1626	1837	1355
M33	3.5	2994	2208	2566	1893	2138	1577	3499	2581	2999	2212	2499	1843
M36	4	3845	2836	3296	2431	2746	2026	4493	3314	3852	2841	3210	2368

Fastener Torque Specifications

TORQUE CHART - METRIC COATED HEX HEAD AND SOCKET HEAD CAP SCREWS MATED WITH COATED THREADS													
		Class 4.6 hex head cap screw with plain threads / nut						Class 8.8 hex head cap screw with plain threads / nut					
		DRY		THREAD LOCKER		LUBED		DRY		THREAD LOCKER		LUBED	
SIZE	THREAD	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs
M3	0.5	----	----	----	----	----	----	----	----	----	----	----	----
M3.5	0.6	----	----	----	----	----	----	----	----	----	----	----	----
M4	0.7	----	----	----	----	----	----	----	----	----	----	----	----
M5	0.8	2.5	22	2	17.5	2	17.5	6	53	5.5	48.5	4.5	40
M6	1	4	35.5	3.5	31	3	26.5	10	68.5	9	79.5	8	71
M7	1	6.5	57.5	6	53	5	44	16.5	146	15	132.5	13	115
M8	1.25	9.5	84	8.5	75	7.5	66.5	24	212.5	21.5	190	19	168
M10	1.5	18.5	163.5	16.5	146	14.5	128.5	48	425	43	380.5	38	336.5
		Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs
M12	1.75	32.5	24	29	21.5	25.5	19	83.5	61.5	75	55.5	66	48.5
M14	2	51.5	38	46	34	41	30	133	98	119	87.5	105	77.5
M16	2	80.5	59.5	72	53	63.5	47	215	158.5	192	141.5	170	125.5
M18	2.5	111	82	99	73	87.5	64.5	295	217.5	264	194.5	233	172
M20	2.5	157	116	141	104	124	91.5	419	309	375	276.5	331	244
M22	2.5	214	158	191	141	169	124.5	570	420.5	510	376	450	332
M24	3	272	200.5	243	179	214	158	724	534	648	478	572	422
M27	3	397	293	356	262.5	314	231.5	1060	782	948	699	837	617.5
M30	3.5	540	398	483	356	426	314	1439	1062	1287	949	1136	838
M33	3.5	734	542	657	484.5	580	427.5	1958	1444	1752	1292	1546	1140
M36	4	943	695.5	844	622.5	744	548.5	2515	1855	2250	1660	1985	1464

Fastener Torque Specifications

TORQUE CHART - METRIC COATED HEX HEAD AND SOCKET HEAD CAP SCREWS MATED WITH COATED THREADS													
		Class 10.9 hex head cap screw with plain threads / nut						Class 12.9 hex head cap screw with plain threads / nut					
		DRY		THREAD LOCKER		LUBED		DRY		THREAD LOCKER		LUBED	
SIZE	THREAD	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs
M3	0.5	----	----	----	----	----	----	2	17.5	2	17.5	1.5	13
M3.5	0.6	----	----	----	----	----	----	3.5	31	3	26.3	2.5	22
M4	0.7	----	----	----	----	----	----	5	44	4.5	40	4	35.5
M5	0.8	8.5	75	7.5	66.5	6.5	57.5	10	68.5	9	79.5	7.5	66.5
M6	1	14.5	128.5	13	115	11.5	102	16.5	146	15	132.5	13	115
M7	1	24	212.5	21.5	190	19	168	28	248	25	221	22	194.5
M8	1.25	34.5	305.5	31	274.5	27.5	243.5	40.5	358.5	36	318.5	32	283
		Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs
M10	1.5	68.5	50.5	61.5	45.5	54	40	80	59	71.5	52.5	63.5	47
M12	1.75	120	88.5	107	79	94.5	69.5	140	103	125	92	110	81
M14	2	190	140	170	125.5	150	110.5	223	164.5	199	146.5	176	130
M16	2	297	219	266	196	235	173.5	347	256	311	229.5	274	202
M18	2.5	409	301.5	366	270	323	238	478	352.5	427	315	377	278
M20	2.5	580	427.5	519	383	458	338	677	499.5	606	447	535	394.5
M22	2.5	788	581	705	520	622	458.5	921	679	842	621	727	536
M24	3	1002	739	897	661.5	791	583.5	1171	863.5	1048	773	925	682
M27	3	1466	1081	1311	967	1157	853.5	1713	1264	1533	1131	1352	997
M30	3.5	1991	1469	1781	1314	1572	1160	2326	1716	2081	1534	1837	1355
M33	3.5	3709	2736	2424	1788	2138	1577	3166	2335	2832	2089	2499	1843
M36	4	3479	2566	3113	2296	2746	2026	4065	2998	3638	2683	3210	2368

Fastener Torque Specifications

TORQUE CHART - METRIC COATED FLANGE SCREWS MATED WITH PLAIN OR ZINC PLATED THREADS													
		Class 4.6 hex head flange screw with plain threads / nut						Class 8.8 hex head flange screw with plain threads / nut					
		DRY		THREAD LOCKER		LUBED		DRY		THREAD LOCKER		LUBED	
SIZE	THREAD	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs
M5	0.8	3.5	31	3	26.5	2.5	22	9.5	84	8.5	75	6	53
M6	1	6.5	57.5	5.5	48.5	4	35.5	16.5	146	14	124	10.5	93
M7	1	10.5	93	9	79.5	7	62	27.5	243.5	24	212.5	17.5	155
M8	1.25	15.5	137	13.5	119.5	10	68.5	39.5	349.5	34.5	305.5	25.5	225.5
		Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs
M10	1.5	30.5	22.5	26.5	19.5	19.5	14.5	78	57.5	68	50	50.5	37
M12	1.75	53	39	46	34	34	25	136	100.5	119	87.5	88	65
M14	2	84	62	73.5	54	54.5	40	217	160	189	139.5	140	103
M16	2	131	96.5	114	84	85	62.5	350	258	305	225	226	166.5
M18	2.5	181	133.5	157	115.5	117	86	482	355.5	420	309.5	311	229.5
M20	2.5	256	189	223	164.5	165	121.5	684	504.5	595	439	441	325
M22	2.5	349	257.5	304	224	225	166	930	686	810	597.5	600	442.5
M24	3	443	326.5	386	284.5	286	211	1182	872	1029	759	762	562
M27	3	648	478	565	416.5	418	308.5	1729	1275	1506	1111	1115	822.5
M30	3.5	880	649	767	565.5	568	419	2348	1732	2045	1509	1515	1118
M33	3.5	1198	883.5	1043	769	773	570	3195	2357	2783	2053	2061	1520
M36	4	1539	1135	1340	988.5	993	732.5	4103	3026	3574	2636	2647	1953

Fastener Torque Specifications

TORQUE CHART - METRIC COATED FLANGE SCREWS MATED WITH PLAIN OR ZINC PLATED THREADS													
		Class 10.9 hex head flange screw with plain threads / nut											
		DRY		THREAD LOCKER		LUBED							
SIZE	THREAD	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs						
M5	0.8	13.5	119.5	12	106	9	79.5						
M6	1	23.5	208	20.5	181.5	15	132.5						
M7	1	39	345	34	301	25	221						
M8	1.25	56.5	500	49	433.5	36.5	323						
		Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs						
M10	1.5	112	82.5	97.5	72	72	53						
M12	1.75	195	144	170	125.5	126	93						
M14	2	311	229.5	271	200	200	147.5						
M16	2	485	357.5	422	311	313	231						
M18	2.5	667	492	581	428.5	430	317						
M20	2.5	946	697.5	824	608	610	450						
M22	2.5	1286	948.5	1120	826	830	612						
M24	3	1635	1206	1424	1050	1055	778						
M27	3	2392	1764	2083	1537	1543	1138						
M30	3.5	3248	2396	2829	2087	2095	1545						
M33	3.5	4420	3260	3849	2839	2851	2103						
M36	4	5676	4187	4943	3646	3662	2701						

Genie Sweden

Phone 0046 3157 5101
Fax 0046 3157 5104

Genie France

Phone 0033 237 260 986
Fax 0033 237 260 998

Genie Iberica

Phone 0034 900 808 110
Fax 0034 935 725 080

Genie Germany

Phone 0800 180 9017
Phone 0049 4221 491 810
Fax 0049 4221 491 820

Genie U.K.

Phone 0044 1476 584 333
Fax 0044 1476 584 330

Genie Mexico City

Phone +52 55 5666 5242
Fax +52 55 5666 3241

Genie North America

Phone 425.881.1800
Toll Free USA and Canada
800.536.1800
Fax 425.883.3475

Genie Australia Pty Ltd.

Phone +61 7 3375 1660
Fax +61 7 3375 1002

Genie China

Phone +86 21 53853768
Fax +86 21 53852569

Genie Singapore

Phone +65 67533544
Fax +65 67533544

Genie Japan

Phone +81 3 6436 2020
Fax +81 3 5445 1231

Genie Korea

Phone +82 2 558 7267
Fax +82 2 558 3910

Genie Brasil

Phone +55 11 4082 5600
Fax +55 22 4082 5630

Genie Holland

Phone +31 183 581 102
Fax +31 183 581 566

Distributed By: