

HYTORC

TORQUE GUIDE FOR SAE J429 GRADE 8 STUD					REQUIRED TORQUE (FtLbs)									THESE TORQUE VALUES ARE BASED ON FRICTION FACTOR IN "CUSTOM" COLUMN			
BOLT TENSION BASED ON			40	% YIELD													
BOLT SIZE DIA. x TPI	HEX NUT ACROSS FLAT	STRESS AREA (IN ²)	MIN YIELD STRENGTH (PSI)	BOLT TENSION (LBS)	LoaDISC TS 801MOLY K=.109	MOLYBDENUM DISULFIDE K=.100	MOLY/LEAD OXIDE/GRAPHITE K=.125	COPPER & GRAPHITE K=.140	NICKEL & GRAPHITE K=.150	API SA2 K=.157	MACHINE OIL K=.200	DRY STEEL K=.440	CUSTOM (INSERT K) K=.300	First Pass	Second Pass	All Subsequent Passes	
													0.15	30%	60%	100%	
3/4 x 10	1-1/4"	0.334	130,000	17,383	118	109	136	152	163	171	217	326	163	49	98	163	
7/8 x 9	1-7/16"	0.461	130,000	23,998	191	175	219	245	262	275	350	525	262	79	157	262	
1 x 8	1-5/8"	0.605	130,000	31,483	286	262	328	367	394	412	525	787	394	118	236	394	
1-1/8 x 8	1-13/16"	0.790	130,000	41,083	420	385	481	539	578	605	770	1,155	578	173	347	578	
1-1/4 x 8	2"	0.999	130,000	51,958	590	541	677	758	812	850	1,082	1,624	812	244	487	812	
1-3/8 x 8	2-3/16"	1.233	130,000	64,110	801	735	918	1,028	1,102	1,153	1,469	2,204	1,102	331	661	1102	
1-1/2 x 8	2-3/8"	1.491	130,000	77,536	1,056	969	1,212	1,357	1,454	1,522	1,938	2,908	1,454	436	872	1454	

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Corpus Christi 78408	Odessa, TX 78765	Houston, TX 77013	Beaumont, TX 77705	Mansfield, TX 76063
361-888-5080	432-561-8481	713-453-6677	409-840-9699	682-334-2679

REV 7.31.09

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 To use spread sheet click desired tab for B7 or B16 material
 Enter the desired percent yield in yellow field at top of form
 If 'K' factor is not listed, Enter appropriate value under Custom (insert K) , in yellow field only
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BOLT TENSION BASED ON			50	% YIELD													
BOLT SIZE DIA. x TPI	HEX NUT ACROSS FLAT	STRESS AREA (IN ²)	MIN YIELD STRENGTH (PSI)	BOLT TENSION (LBS)	LoaDISC TS 801MOLY K=.109	MOLYBDENUM DISULFIDE K=.100	MOLY/LEAD OXIDE/GRAPHITE K=.125	COPPER & GRAPHITE K=.140	NICKEL & GRAPHITE K=.150	API SA2 K=.157	MACHINE OIL K=.200	DRY STEEL K=.440	CUSTOM (INSERT K) K=.300	First Pass	Second Pass	All Subsequent Passes	
													0.15	30%	60%	100%	
3/4 x 10	1-1/4"	0.334	130,000	21,729	148	136	170	190	204	213	272	407	204	61	122	204	
7/8 x 9	1-7/16"	0.461	130,000	29,997	238	219	273	306	328	343	437	656	328	98	197	328	
1 x 8	1-5/8"	0.605	130,000	39,353	357	328	410	459	492	515	656	984	492	148	295	492	
1-1/8 x 8	1-13/16"	0.790	130,000	51,353	525	481	602	674	722	756	963	1,444	722	217	433	722	
1-1/4 x 8	2"	0.999	130,000	64,948	737	677	846	947	1,015	1,062	1,353	2,030	1,015	304	609	1015	
1-3/8 x 8	2-3/16"	1.233	130,000	80,137	1,001	918	1,148	1,286	1,377	1,442	1,836	2,755	1,377	413	826	1377	
1-1/2 x 8	2-3/8"	1.491	130,000	96,920	1,321	1,212	1,514	1,696	1,817	1,902	2,423	3,635	1,817	545	1090	1817	

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BOLT TENSION BASED ON			60	% YIELD										First Pass	Second Pass	All Subsequent Passes
BOLT SIZE DIA. x TPI	HEX NUT ACROSS FLAT	STRESS AREA (IN ²)	MIN YIELD STRENGTH (PSI)	BOLT TENSION (LBS)	LoaDISC TS 801MOLY K=.109	MOLYBDENUM DISULFIDE K=.100	MOLY/LEAD OXIDE/GRAPHITE K=.125	COPPER & GRAPHITE K=.140	NICKEL & GRAPHITE K=.150	API SA2 K=.157	MACHINE OIL K=.200	DRY STEEL K=.440	CUSTOM (INSERT K) K=.300	30%	60%	100%
3/4 x 10	1-1/4"	0.334	130,000	26,075	178	163	204	228	244	256	326	489	244	73	147	244
7/8 x 9	1-7/16"	0.461	130,000	35,997	286	262	328	367	394	412	525	787	394	118	236	394
1 x 8	1-5/8"	0.605	130,000	47,224	429	394	492	551	590	618	787	1,181	590	177	354	590
1-1/8 x 8	1-13/16"	0.790	130,000	61,624	630	578	722	809	867	907	1,155	1,733	867	260	520	867
1-1/4 x 8	2"	0.999	130,000	77,937	885	812	1,015	1,137	1,218	1,275	1,624	2,436	1,218	365	731	1,218
1-3/8 x 8	2-3/16"	1.233	130,000	96,164	1,201	1,102	1,377	1,543	1,653	1,730	2,204	3,306	1,653	496	992	1,653
1-1/2 x 8	2-3/8"	1.491	130,000	116,305	1,585	1,454	1,817	2,035	2,181	2,282	2,908	4,361	2,181	654	1308	2181

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BOLT TENSION BASED ON			70	% YIELD													
BOLT SIZE DIA. x TPI	HEX NUT ACROSS FLAT	STRESS AREA (IN ²)	MIN YIELD STRENGTH (PSI)	BOLT TENSION (LBS)	LoaDISC TS 801MOLY K=.109	MOLYBDENUM DISULFIDE K=.100	MOLY/LEAD OXIDE/GRAPHITE K=.125	COPPER & GRAPHITE K=.140	NICKEL & GRAPHITE K=.150	API SA2 K=.157	MACHINE OIL K=.200	DRY STEEL K=.440	CUSTOM (INSERT K) K=.300	First Pass	Second Pass	All Subsequent Passes	
													0.15	30%	60%	100%	
3/4 x 10	1-1/4"	0.334	130,000	30,420	207	190	238	266	285	299	380	570	285	86	171	285	
7/8 x 9	1-7/16"	0.461	130,000	41,996	334	306	383	429	459	481	612	919	459	138	276	459	
1 x 8	1-5/8"	0.605	130,000	55,095	500	459	574	643	689	721	918	1,377	689	207	413	689	
1-1/8 x 8	1-13/16"	0.790	130,000	71,895	735	674	843	944	1,011	1,058	1,348	2,022	1,011	303	607	1011	
1-1/4 x 8	2"	0.999	130,000	90,927	1,032	947	1,184	1,326	1,421	1,487	1,894	2,841	1,421	426	852	1421	
1-3/8 x 8	2-3/16"	1.233	130,000	112,192	1,401	1,286	1,607	1,800	1,928	2,018	2,571	3,857	1,928	578	1157	1928	
1-1/2 x 8	2-3/8"	1.491	130,000	135,689	1,849	1,696	2,120	2,375	2,544	2,663	3,392	5,088	2,544	763	1526	2544	

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BOLT TENSION BASED ON			80	% YIELD										First Pass	Second Pass	All Subsequent Passes
BOLT SIZE DIA. x TPI	HEX NUT ACROSS FLAT	STRESS AREA (IN ²)	MIN YIELD STRENGTH (PSI)	BOLT TENSION (LBS)	LoaDISC TS 801MOLY K=.109	MOLYBDENUM DISULFIDE K=.100	MOLY/LEAD OXIDE/GRAPHITE K=.125	COPPER & GRAPHITE K=.140	NICKEL & GRAPHITE K=.150	API SA2 K=.157	MACHINE OIL K=.200	DRY STEEL K=.440	CUSTOM (INSERT K) K=.300	30%	60%	100%
3/4 x 10	1-1/4"	0.334	130,000	34,766	237	217	272	304	326	341	435	652	326	98	196	326
7/8 x 9	1-7/16"	0.461	130,000	47,996	381	350	437	490	525	549	700	1,050	525	157	315	525
1 x 8	1-5/8"	0.605	130,000	62,965	572	525	656	735	787	824	1,049	1,574	787	236	472	787
1-1/8 x 8	1-13/16"	0.790	130,000	82,165	840	770	963	1,078	1,155	1,209	1,541	2,311	1,155	347	693	1,155
1-1/4 x 8	2"	0.999	130,000	103,917	1,180	1,082	1,353	1,515	1,624	1,699	2,165	3,247	1,624	487	974	1,624
1-3/8 x 8	2-3/16"	1.233	130,000	128,219	1,601	1,469	1,836	2,057	2,204	2,307	2,938	4,408	2,204	661	1,322	2,204
1-1/2 x 8	2-3/8"	1.491	130,000	155,073	2,113	1,938	2,423	2,714	2,908	3,043	3,877	5,815	2,908	872	1,745	2,908

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BOLT TENSION BASED ON			90	% YIELD														
BOLT SIZE DIA. x TPI	HEX NUT ACROSS FLAT	STRESS AREA (IN ²)	MIN YIELD STRENGTH (PSI)	BOLT TENSION (LBS)	LoaDISC TS 801MOLY K=.109	MOLYBDENUM DISULFIDE K=.100	MOLY/LEAD OXIDE/GRAPHITE K=.125	COPPER & GRAPHITE K=.140	NICKEL & GRAPHITE K=.150	API SA2 K=.157	MACHINE OIL K=.200	DRY STEEL K=.440	CUSTOM (INSERT K) K=.300	First Pass	Second Pass	All Subsequent Passes		
3/4 x 10	1-1/4"	0.334	130,000	39,112	266	244	306	342	367	384	489	733	0.15	30%	60%	100%		
7/8 x 9	1-7/16"	0.461	130,000	53,995	429	394	492	551	591	618	787	1,181	591	177	354	591		
1 x 8	1-5/8"	0.605	130,000	70,836	643	590	738	826	885	927	1,181	1,771	885	266	531	885		
1-1/8 x 8	1-13/16"	0.790	130,000	92,436	945	867	1,083	1,213	1,300	1,361	1,733	2,600	1,300	390	780	1300		
1-1/4 x 8	2"	0.999	130,000	116,906	1,327	1,218	1,522	1,705	1,827	1,912	2,436	3,653	1,827	548	1096	1827		
1-3/8 x 8	2-3/16"	1.233	130,000	144,246	1,802	1,653	2,066	2,314	2,479	2,595	3,306	4,958	2,479	744	1488	2479		
1-1/2 x 8	2-3/8"	1.491	130,000	174,457	2,377	2,181	2,726	3,053	3,271	3,424	4,361	6,542	3,271	981	1963	3271		

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BOLT TENSION BASED ON			99	% YIELD													
BOLT SIZE DIA. x TPI	HEX NUT ACROSS FLAT	STRESS AREA (IN ²)	MIN YIELD STRENGTH (PSI)	BOLT TENSION (LBS)	LoaDISC TS 801MOLY K=.109	MOLYBDENUM DISULFIDE K=.100	MOLY/LEAD OXIDE/GRAPHITE K=.125	COPPER & GRAPHITE K=.140	NICKEL & GRAPHITE K=.150	API SA2 K=.157	MACHINE OIL K=.200	DRY STEEL K=.440	CUSTOM (INSERT K) K=.300	First Pass	Second Pass	All Subsequent Passes	
													0.15	30%	60%	100%	
3/4 x 10	1-1/4"	0.334	130,000	43,023	293	269	336	376	403	422	538	807	403	121	242	403	
7/8 x 9	1-7/16"	0.461	130,000	59,395	472	433	541	606	650	680	866	1,299	650	195	390	650	
1 x 8	1-5/8"	0.605	130,000	77,920	708	649	812	909	974	1,019	1,299	1,948	974	292	584	974	
1-1/8 x 8	1-13/16"	0.790	130,000	101,680	1,039	953	1,192	1,335	1,430	1,497	1,906	2,860	1,430	429	858	1430	
1-1/4 x 8	2"	0.999	130,000	128,597	1,460	1,340	1,674	1,875	2,009	2,103	2,679	4,019	2,009	603	1206	2009	
1-3/8 x 8	2-3/16"	1.233	130,000	158,671	1,982	1,818	2,273	2,545	2,727	2,854	3,636	5,454	2,727	818	1636	2727	
1-1/2 x 8	2-3/8"	1.491	130,000	191,902	2,615	2,399	2,998	3,358	3,598	3,766	4,798	7,196	3,598	1079	2159	3598	

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