

HYTORC

TORQUE GUIDE FOR SAE J429 GR 5 STUD					REQUIRED TORQUE (FtLbs)									THESE TORQUE VALUES ARE BASED ON FRICTION FACTOR IN "CUSTOM" COLUMN		
BOLT TENSION BASED ON 40 % 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	92,000	12,302	84	77	96	108	115	121	154	231	115	35	69	115
7/8 x 9	1-7/16"	0.461	92,000	16,983	135	124	155	173	186	194	248	372	186	56	111	186
1 x 8	1-5/8"	0.605	92,000	22,280	202	186	232	260	279	291	371	557	279	84	167	279
1-1/8 x 8	1-13/16"	0.790	81,000	25,598	262	240	300	336	360	377	480	720	360	108	216	360
1-1/4 x 8	2"	0.999	81,000	32,374	368	337	422	472	506	529	674	1,012	506	152	304	506
1-3/8 x 8	2-3/16"	1.233	81,000	39,945	499	458	572	641	687	719	915	1,373	687	206	412	687
1-1/2 x 8	2-3/8"	1.491	81,000	48,311	658	604	755	845	906	948	1,208	1,812	906	272	544	906

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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
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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		
3/4 x 10	1-1/4"	0.334	92,000	15,377	105	96	120	135	144	151	192	288	144	43	86	144		
7/8 x 9	1-7/16"	0.461	92,000	21,229	169	155	193	217	232	243	310	464	232	70	139	232		
1 x 8	1-5/8"	0.605	92,000	27,850	253	232	290	325	348	364	464	696	348	104	209	348		
1-1/8 x 8	1-13/16"	0.790	81,000	31,997	327	300	375	420	450	471	600	900	450	135	270	450		
1-1/4 x 8	2"	0.999	81,000	40,468	459	422	527	590	632	662	843	1,265	632	190	379	632		
1-3/8 x 8	2-3/16"	1.233	81,000	49,931	624	572	715	801	858	898	1,144	1,716	858	257	515	858		
1-1/2 x 8	2-3/8"	1.491	81,000	60,389	823	755	944	1,057	1,132	1,185	1,510	2,265	1,132	340	679	1132		

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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	92,000	18,453	126	115	144	161	173	181	231	346	173	52	104	173
7/8 x 9	1-7/16"	0.461	92,000	25,475	202	186	232	260	279	292	372	557	279	84	167	279
1 x 8	1-5/8"	0.605	92,000	33,420	304	279	348	390	418	437	557	836	418	125	251	418
1-1/8 x 8	1-13/16"	0.790	81,000	38,397	392	360	450	504	540	565	720	1,080	540	162	324	540
1-1/4 x 8	2"	0.999	81,000	48,561	551	506	632	708	759	794	1,012	1,518	759	228	455	759
1-3/8 x 8	2-3/16"	1.233	81,000	59,918	748	687	858	961	1,030	1,078	1,373	2,060	1,030	309	618	1030
1-1/2 x 8	2-3/8"	1.491	81,000	72,467	987	906	1,132	1,268	1,359	1,422	1,812	2,718	1,359	408	815	1359

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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	92,000	21,528	147	135	168	188	202	211	269	404	202	61	121	202		
7/8 x 9	1-7/16"	0.461	92,000	29,721	236	217	271	303	325	340	433	650	325	98	195	325		
1 x 8	1-5/8"	0.605	92,000	38,990	354	325	406	455	487	510	650	975	487	146	292	487		
1-1/8 x 8	1-13/16"	0.790	81,000	44,796	458	420	525	588	630	659	840	1,260	630	189	378	630		
1-1/4 x 8	2"	0.999	81,000	56,655	643	590	738	826	885	927	1,180	1,770	885	266	531	885		
1-3/8 x 8	2-3/16"	1.233	81,000	69,904	873	801	1,001	1,121	1,201	1,258	1,602	2,403	1,201	360	721	1201		
1-1/2 x 8	2-3/8"	1.491	81,000	84,544	1,152	1,057	1,321	1,480	1,585	1,659	2,114	3,170	1,585	476	951	1585		

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BOLT TENSION BASED ON		80 % 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	92,000	24,604	168	154	192	215	231	241	308	461	231	69	138	231		
7/8 x 9	1-7/16"	0.461	92,000	33,966	270	248	310	347	372	389	495	743	372	111	223	372		
1 x 8	1-5/8"	0.605	92,000	44,560	405	371	464	520	557	583	743	1,114	557	167	334	557		
1-1/8 x 8	1-13/16"	0.790	81,000	51,195	523	480	600	672	720	754	960	1,440	720	216	432	720		
1-1/4 x 8	2"	0.999	81,000	64,748	735	674	843	944	1,012	1,059	1,349	2,023	1,012	304	607	1012		
1-3/8 x 8	2-3/16"	1.233	81,000	79,890	998	915	1,144	1,282	1,373	1,437	1,831	2,746	1,373	412	824	1373		
1-1/2 x 8	2-3/8"	1.491	81,000	96,622	1,316	1,208	1,510	1,691	1,812	1,896	2,416	3,623	1,812	544	1087	1812		

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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		
													0.15	30%	60%	100%		
3/4 x 10	1-1/4"	0.334	92,000	27,679	189	173	216	242	259	272	346	519	259	78	156	259		
7/8 x 9	1-7/16"	0.461	92,000	38,212	304	279	348	390	418	437	557	836	418	125	251	418		
1 x 8	1-5/8"	0.605	92,000	50,130	455	418	522	585	627	656	836	1,253	627	188	376	627		
1-1/8 x 8	1-13/16"	0.790	81,000	57,595	589	540	675	756	810	848	1,080	1,620	810	243	486	810		
1-1/4 x 8	2"	0.999	81,000	72,842	827	759	948	1,062	1,138	1,191	1,518	2,276	1,138	341	683	1,138		
1-3/8 x 8	2-3/16"	1.233	81,000	89,877	1,123	1,030	1,287	1,442	1,545	1,617	2,060	3,090	1,545	463	927	1,545		
1-1/2 x 8	2-3/8"	1.491	81,000	108,700	1,481	1,359	1,698	1,902	2,038	2,133	2,718	4,076	2,038	611	1,223	2,038		

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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		
													0.15	30%	60%	100%		
3/4 x 10	1-1/4"	0.334	92,000	27,679	189	173	216	242	259	272	346	519	259	78	156	259		
7/8 x 9	1-7/16"	0.461	92,000	38,212	304	279	348	390	418	437	557	836	418	125	251	418		
1 x 8	1-5/8"	0.605	92,000	50,130	455	418	522	585	627	656	836	1,253	627	188	376	627		
1-1/8 x 8	1-13/16"	0.790	81,000	57,595	589	540	675	756	810	848	1,080	1,620	810	243	486	810		
1-1/4 x 8	2"	0.999	81,000	72,842	827	759	948	1,062	1,138	1,191	1,518	2,276	1,138	341	683	1,138		
1-3/8 x 8	2-3/16"	1.233	81,000	89,877	1,123	1,030	1,287	1,442	1,545	1,617	2,060	3,090	1,545	463	927	1,545		
1-1/2 x 8	2-3/8"	1.491	81,000	108,700	1,481	1,359	1,698	1,902	2,038	2,133	2,718	4,076	2,038	611	1,223	2,038		

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