

# HYTORC

TORQUE GUIDE FOR ISO R898 GRADE 8.8 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 <sup>2</sup> )	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 K=.300	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	96,000	12,837	87	80	100	112	120	126	160	241	120	36	72	120			
7/8 x 9	1-7/16"	0.461	96,000	17,722	141	129	162	181	194	203	258	388	194	58	116	194			
1x 8	1-5/8"	0.605	96,000	23,249	211	194	242	271	291	304	387	581	291	87	174	291			
1-1/8 x 8	1-13/16"	0.790	96,000	30,338	310	284	356	398	427	447	569	853	427	128	256	427			
1-1/4 x 8	2"	0.999	96,000	38,369	436	400	500	560	600	627	799	1,199	600	180	360	600			
1-3/8 x 8	2-3/16"	1.233	96,000	47,342	591	542	678	759	814	852	1,085	1,627	814	244	488	814			
1-1/2 x 8	2-3/8"	1.491	96,000	57,258	780	716	895	1,002	1,074	1,124	1,431	2,147	1,074	322	644	1074			
1-5/8 x 8	2-9/16"	1.774	96,000	68,115	1,005	922	1,153	1,291	1,384	1,448	1,845	2,767	1,384	415	830	1384			
1-3/4 x 8	2-3/4"	2.081	96,000	79,914	1,270	1,165	1,457	1,632	1,748	1,830	2,331	3,496	1,748	524	1049	1748			
1-7/8 x 8	2-15/16"	2.413	96,000	92,655	1,578	1,448	1,810	2,027	2,172	2,273	2,895	4,343	2,172	651	1303	2172			
2 x 8	3-1/8"	2.769	96,000	106,338	1,932	1,772	2,215	2,481	2,658	2,783	3,545	5,317	2,658	798	1595	2658			
2-1/8 x 8	3-5/16"	3.150	96,000	120,964	2,335	2,142	2,678	2,999	3,213	3,363	4,284	6,426	3,213	964	1928	3213			
2-1/4 x 8	3-1/2"	3.555	96,000	136,531	2,790	2,560	3,200	3,584	3,840	4,019	5,120	7,680	3,840	1152	2304	3840			
2-3/8 x 8	3-11/16"	3.985	96,000	153,040	3,302	3,029	3,786	4,240	4,543	4,755	6,058	9,087	4,543	1363	2726	4543			
2-1/2 x 8	3-7/8"	4.440	96,000	170,491	3,872	3,552	4,440	4,973	5,328	5,576	7,104	10,656	5,328	1598	3197	5328			
2-3/4 x 8	4-1/4"	5.422	96,000	208,220	5,201	4,772	5,965	6,680	7,158	7,492	9,543	14,315	7,158	2147	4295	7158			
3 x 8	4-5/8"	6.503	96,000	249,716	6,805	6,243	7,804	8,740	9,364	9,801	12,486	18,729	9,364	2809	5619	9364			
3-1/4 x 8	5"	7.682	96,000	294,981	8,708	7,989	9,986	11,185	11,984	12,543	15,978	23,967	11,984	3595	7190	11984			
3-1/2 x 8	5-3/8"	8.959	96,000	344,013	10,937	10,034	12,542	14,047	15,051	15,753	20,067	30,101	15,051	4515	9030	15051			
3-3/4 x 8	5-3/4"	10.334	96,000	396,813	13,516	12,400	15,501	17,361	18,601	19,469	24,801	37,201	18,601	5580	11160	18601			
4 x 8	6-1/8"	11.807	96,000	453,382	16,473	15,113	18,891	21,158	22,669	23,727	30,225	45,338	22,669	6801	13601	22669			
4-1/4 x 8	6-1/2"	13.378	96,000	513,718	19,832	18,194	22,743	25,472	27,291	28,565	36,388	54,583	27,291	8187	16375	27291			
4-1/2 x 8	6-7/8"	15.047	96,000	577,823	23,619	21,668	27,085	30,336	32,503	34,019	43,337	65,005	32,503	9751	19502	32503			
4-3/4 x 8	7-1/4"	16.815	96,000	645,695	27,859	25,559	31,948	35,782	38,338	40,127	51,118	76,676	38,338	11501	23003	38338			
5 x 8	7-5/8"	18.681	96,000	717,335	32,579	29,889	37,361	41,845	44,833	46,926	59,778	89,667	44,833	13450	26900	44833			
5-1/4 x 8	8"	20.644	96,000	792,744	37,804	34,683	43,353	48,556	52,024	54,452	69,365	104,048	52,024	15607	31214	52024			
5-1/2 x 8	8-3/8"	22.706	96,000	871,920	43,560	39,963	49,954	55,948	59,945	62,742	79,926	119,889	59,945	17983	35967	59945			
5-3/4 x 8	8-3/4"	24.866	96,000	954,865	49,872	45,754	57,192	64,056	68,631	71,834	91,508	137,262	68,631	20589	41179	68631			
6 x 8	9-1/8"	27.124	96,000	1,041,577	56,766	52,079	65,099	72,910	78,118	81,764	104,158	156,237	78,118	23435	46871	78118			

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

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 To use spread sheet click desired tab for B7 or B16 material  
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BOLT TENSION BASED ON				50	% YIELD										First Pass	Second Pass	All Subsequent Passes
BOLT SIZE DIA. x TPI	HEX NUT ACROSS FLAT	STRESS AREA (IN <sup>2</sup> )	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 K=.300	CUSTOM (INSERT K) K=.300	30%	60%	100%	
3/4 x 10	1-1/4"	0.334	96,000	16,046	109	100	125	140	150	157	201	301	150	45	90	150	
7/8 x 9	1-7/16"	0.461	96,000	22,152	176	162	202	226	242	254	323	485	242	73	145	242	
1 x 8	1-5/8"	0.605	96,000	29,061	264	242	303	339	363	380	484	727	363	109	218	363	
1-1/8 x 8	1-13/16"	0.790	96,000	37,922	388	356	444	498	533	558	711	1,067	533	160	320	533	
1-1/4 x 8	2"	0.999	96,000	47,961	545	500	624	699	749	784	999	1,499	749	225	450	749	
1-3/8 x 8	2-3/16"	1.233	96,000	59,178	739	678	848	949	1,017	1,065	1,356	2,034	1,017	305	610	1017	
1-1/2 x 8	2-3/8"	1.491	96,000	71,572	975	895	1,118	1,253	1,342	1,405	1,789	2,684	1,342	403	805	1342	
1-5/8 x 8	2-9/16"	1.774	96,000	85,144	1,257	1,153	1,441	1,614	1,729	1,810	2,306	3,459	1,729	519	1038	1729	
1-3/4 x 8	2-3/4"	2.081	96,000	99,893	1,588	1,457	1,821	2,039	2,185	2,287	2,914	4,370	2,185	656	1311	2185	
1-7/8 x 8	2-15/16"	2.413	96,000	115,819	1,973	1,810	2,262	2,534	2,715	2,841	3,619	5,429	2,715	814	1629	2715	
2 x 8	3-1/8"	2.769	96,000	132,923	2,415	2,215	2,769	3,102	3,323	3,478	4,431	6,646	3,323	997	1994	3323	
2-1/8 x 8	3-5/16"	3.150	96,000	151,205	2,919	2,678	3,347	3,749	4,016	4,204	5,355	8,033	4,016	1205	2410	4016	
2-1/4 x 8	3-1/2"	3.555	96,000	170,664	3,488	3,200	4,000	4,480	4,800	5,024	6,400	9,600	4,800	1440	2880	4800	
2-3/8 x 8	3-11/16"	3.985	96,000	191,300	4,127	3,786	4,733	5,301	5,679	5,944	7,572	11,358	5,679	1704	3408	5679	
2-1/2 x 8	3-7/8"	4.440	96,000	213,114	4,839	4,440	5,550	6,216	6,660	6,971	8,880	13,320	6,660	1998	3996	6660	
2-3/4 x 8	4-1/4"	5.422	96,000	260,275	6,501	5,965	7,456	8,350	8,947	9,364	11,929	17,894	8,947	2684	5368	8947	
3 x 8	4-5/8"	6.503	96,000	312,145	8,506	7,804	9,755	10,925	11,705	12,252	15,607	23,411	11,705	3512	7023	11705	
3-1/4 x 8	5"	7.682	96,000	368,726	10,885	9,986	12,483	13,981	14,979	15,679	19,973	29,959	14,979	4494	8988	14979	
3-1/2 x 8	5-3/8"	8.959	96,000	430,016	13,671	12,542	15,678	17,559	18,813	19,691	25,084	37,626	18,813	5644	11288	18813	
3-3/4 x 8	5-3/4"	10.334	96,000	496,017	16,896	15,501	19,376	21,701	23,251	24,336	31,001	46,502	23,251	6975	13950	23251	
4 x 8	6-1/8"	11.807	96,000	566,727	20,591	18,891	23,614	26,447	28,336	29,659	37,782	56,673	28,336	8501	17002	28336	
4-1/4 x 8	6-1/2"	13.378	96,000	642,148	24,790	22,743	28,428	31,840	34,114	35,706	45,485	68,228	34,114	10234	20468	34114	
4-1/2 x 8	6-7/8"	15.047	96,000	722,278	29,523	27,085	33,857	37,920	40,628	42,524	54,171	81,256	40,628	12188	24377	40628	
4-3/4 x 8	7-1/4"	16.815	96,000	807,119	34,824	31,948	39,936	44,728	47,923	50,159	63,897	95,845	47,923	14377	28754	47923	
5 x 8	7-5/8"	18.681	96,000	896,669	40,724	37,361	46,702	52,306	56,042	58,657	74,722	112,084	56,042	16813	33625	56042	
5-1/4 x 8	8"	20.644	96,000	990,930	47,255	43,353	54,191	60,694	65,030	68,064	86,706	130,060	65,030	19509	39018	65030	
5-1/2 x 8	8-3/8"	22.706	96,000	1,089,900	54,450	49,954	62,442	69,935	74,931	78,427	99,908	149,861	74,931	22479	44958	74931	
5-3/4 x 8	8-3/4"	24.866	96,000	1,193,581	62,340	57,192	71,491	80,069	85,789	89,792	114,385	171,577	85,789	25737	51473	85789	
6 x 8	9-1/8"	27.124	96,000	1,301,971	70,957	65,099	81,373	91,138	97,648	102,205	130,197	195,296	97,648	29294	58589	97648	

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BOLT SIZE DIA. x TPI	HEX NUT ACROSS FLAT	STRESS AREA (IN <sup>2</sup> )	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 K=.300	CUSTOM (INSERT K) K=.300			
													0.15	30%	60%	100%
3/4 x 10	1-1/4"	0.334	96,000	19,255	131	120	150	168	181	189	241	361	181	54	108	181
7/8 x 9	1-7/16"	0.461	96,000	26,582	211	194	242	271	291	304	388	581	291	87	174	291
1 x 8	1-5/8"	0.605	96,000	34,873	317	291	363	407	436	456	581	872	436	131	262	436
1-1/8 x 8	1-13/16"	0.790	96,000	45,507	465	427	533	597	640	670	853	1,280	640	192	384	640
1-1/4 x 8	2"	0.999	96,000	57,554	653	600	749	839	899	941	1,199	1,799	899	270	540	899
1-3/8 x 8	2-3/16"	1.233	96,000	71,014	887	814	1,017	1,139	1,221	1,278	1,627	2,441	1,221	366	732	1,221
1-1/2 x 8	2-3/8"	1.491	96,000	85,886	1,170	1,074	1,342	1,503	1,610	1,686	2,147	3,221	1,610	483	966	1,610
1-5/8 x 8	2-9/16"	1.774	96,000	102,172	1,508	1,384	1,729	1,937	2,075	2,172	2,767	4,151	2,075	623	1,245	2,075
1-3/4 x 8	2-3/4"	2.081	96,000	119,871	1,905	1,748	2,185	2,447	2,622	2,745	3,496	5,244	2,622	787	1,573	2,622
1-7/8 x 8	2-15/16"	2.413	96,000	138,983	2,367	2,172	2,715	3,040	3,257	3,409	4,343	6,515	3,257	977	1,954	3,257
2 x 8	3-1/8"	2.769	96,000	159,508	2,898	2,658	3,323	3,722	3,988	4,174	5,317	7,975	3,988	1,196	2,393	3,988
2-1/8 x 8	3-5/16"	3.150	96,000	181,445	3,502	3,213	4,016	4,498	4,820	5,045	6,426	9,639	4,820	1,446	2,892	4,820
2-1/4 x 8	3-1/2"	3.555	96,000	204,796	4,186	3,840	4,800	5,376	5,760	6,029	7,680	11,520	5,760	1,728	3,456	5,760
2-3/8 x 8	3-11/16"	3.985	96,000	229,560	4,952	4,543	5,679	6,361	6,815	7,133	9,087	13,630	6,815	2,045	4,089	6,815
2-1/2 x 8	3-7/8"	4.440	96,000	255,737	5,807	5,328	6,660	7,459	7,992	8,365	10,656	15,984	7,992	2,398	4,795	7,992
2-3/4 x 8	4-1/4"	5.422	96,000	312,330	7,802	7,158	8,947	10,021	10,736	11,237	14,315	21,473	10,736	3,221	6,442	10,736
3 x 8	4-5/8"	6.503	96,000	374,574	10,207	9,364	11,705	13,110	14,047	14,702	18,729	28,093	14,047	4,214	8,428	14,047
3-1/4 x 8	5"	7.682	96,000	442,471	13,062	11,984	14,979	16,777	17,975	18,814	23,967	35,951	17,975	5,393	10,785	17,975
3-1/2 x 8	5-3/8"	8.959	96,000	516,019	16,405	15,051	18,813	21,071	22,576	23,629	30,101	45,152	22,576	6,773	13,546	22,576
3-3/4 x 8	5-3/4"	10.334	96,000	595,220	20,275	18,601	23,251	26,041	27,901	29,203	37,201	55,802	27,901	8,370	16,741	27,901
4 x 8	6-1/8"	11.807	96,000	680,073	24,709	22,669	28,336	31,737	34,004	35,590	45,338	68,007	34,004	10,201	20,402	34,004
4-1/4 x 8	6-1/2"	13.378	96,000	770,577	29,747	27,291	34,114	38,208	40,937	42,847	54,583	81,874	40,937	12,281	24,562	40,937
4-1/2 x 8	6-7/8"	15.047	96,000	866,734	35,428	32,503	40,628	45,504	48,754	51,029	65,005	97,508	48,754	14,626	29,252	48,754
4-3/4 x 8	7-1/4"	16.815	96,000	968,543	41,789	38,338	47,923	53,673	57,507	60,191	76,676	115,014	57,507	17,252	34,504	57,507
5 x 8	7-5/8"	18.681	96,000	1,076,003	48,868	44,833	56,042	62,767	67,250	70,389	89,667	134,500	67,250	20,175	40,350	67,250
5-1/4 x 8	8"	20.644	96,000	1,189,116	56,706	52,024	65,030	72,833	78,036	81,677	104,048	156,071	78,036	23,411	46,821	78,036
5-1/2 x 8	8-3/8"	22.706	96,000	1,307,880	65,340	59,945	74,931	83,922	89,917	94,113	119,889	179,834	89,917	26,975	53,950	89,917
5-3/4 x 8	8-3/4"	24.866	96,000	1,432,297	74,808	68,631	85,789	96,083	102,946	107,751	137,262	205,893	102,946	30,884	61,768	102,946
6 x 8	9-1/8"	27.124	96,000	1,562,366	85,149	78,118	97,648	109,366	117,177	122,646	156,237	234,355	117,177	35,153	70,306	117,177

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# HYTORC

TORQUE GUIDE FOR ISO R898 GRADE 8.8 STUD					REQUIRED TORQUE (FtLbs)									THESE TORQUE VALUES ARE BASED ON FRICTION FACTOR IN "CUSTOM" COLUMN			
BOLT TENSION BASED ON				70	% YIELD										First Pass	Second Pass	All Subsequent Passes
BOLT SIZE DIA. x TPI	HEX NUT ACROSS FLAT	STRESS AREA (IN <sup>2</sup> )	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 K=.300	CUSTOM (INSERT K) K=.300	30%	60%	100%	
3/4 x 10	1-1/4"	0.334	96,000	22,464	153	140	176	197	211	220	281	421	211	63	126	211	
7/8 x 9	1-7/16"	0.461	96,000	31,013	246	226	283	317	339	355	452	678	339	102	204	339	
1 x 8	1-5/8"	0.605	96,000	40,685	370	339	424	475	509	532	678	1,017	509	153	305	509	
1-1/8 x 8	1-13/16"	0.790	96,000	53,091	543	498	622	697	747	781	995	1,493	747	224	448	747	
1-1/4 x 8	2"	0.999	96,000	67,146	762	699	874	979	1,049	1,098	1,399	2,098	1,049	315	629	1,049	
1-3/8 x 8	2-3/16"	1.233	96,000	82,849	1,035	949	1,187	1,329	1,424	1,490	1,899	2,848	1,424	427	854	1,424	
1-1/2 x 8	2-3/8"	1.491	96,000	100,201	1,365	1,253	1,566	1,754	1,879	1,966	2,505	3,758	1,879	564	1,127	1,879	
1-5/8 x 8	2-9/16"	1.774	96,000	119,201	1,759	1,614	2,018	2,260	2,421	2,534	3,228	4,843	2,421	726	1,453	2,421	
1-3/4 x 8	2-3/4"	2.081	96,000	139,850	2,223	2,039	2,549	2,855	3,059	3,202	4,079	6,118	3,059	918	1,836	3,059	
1-7/8 x 8	2-15/16"	2.413	96,000	162,147	2,762	2,534	3,167	3,547	3,800	3,978	5,067	7,601	3,800	1,140	2,280	3,800	
2 x 8	3-1/8"	2.769	96,000	186,092	3,381	3,102	3,877	4,342	4,652	4,869	6,203	9,305	4,652	1,396	2,791	4,652	
2-1/8 x 8	3-5/16"	3.150	96,000	211,686	4,086	3,749	4,686	5,248	5,623	5,885	7,497	11,246	5,623	1,687	3,374	5,623	
2-1/4 x 8	3-1/2"	3.555	96,000	238,929	4,883	4,480	5,600	6,272	6,720	7,033	8,960	13,440	6,720	2,016	4,032	6,720	
2-3/8 x 8	3-11/16"	3.985	96,000	267,820	5,778	5,301	6,626	7,421	7,951	8,322	10,601	15,902	7,951	2,385	4,771	7,951	
2-1/2 x 8	3-7/8"	4.440	96,000	298,360	6,775	6,216	7,770	8,702	9,324	9,759	12,432	18,647	9,324	2,797	5,594	9,324	
2-3/4 x 8	4-1/4"	5.422	96,000	364,384	9,102	8,350	10,438	11,691	12,526	13,110	16,701	25,051	12,526	3,758	7,515	12,526	
3 x 8	4-5/8"	6.503	96,000	437,003	11,908	10,925	13,656	15,295	16,388	17,152	21,850	32,775	16,388	4,916	9,833	16,388	
3-1/4 x 8	5"	7.682	96,000	516,216	15,239	13,981	17,476	19,573	20,971	21,950	27,962	41,943	20,971	6,291	12,583	20,971	
3-1/2 x 8	5-3/8"	8.959	96,000	602,023	19,139	17,559	21,949	24,583	26,338	27,568	35,118	52,677	26,338	7,902	15,803	26,338	
3-3/4 x 8	5-3/4"	10.334	96,000	694,423	23,654	21,701	27,126	30,381	32,551	34,070	43,401	65,102	32,551	9,765	19,531	32,551	
4 x 8	6-1/8"	11.807	96,000	793,418	28,828	26,447	33,059	37,026	39,671	41,522	52,895	79,342	39,671	11,901	23,803	39,671	
4-1/4 x 8	6-1/2"	13.378	96,000	899,007	34,705	31,840	39,800	44,576	47,760	49,989	63,680	95,519	47,760	14,328	28,656	47,760	
4-1/2 x 8	6-7/8"	15.047	96,000	1,011,190	41,332	37,920	47,400	53,087	56,879	59,534	75,839	113,759	56,879	17,064	34,128	56,879	
4-3/4 x 8	7-1/4"	16.815	96,000	1,129,966	48,753	44,728	55,910	62,619	67,092	70,223	89,456	134,184	67,092	20,128	40,255	67,092	
5 x 8	7-5/8"	18.681	96,000	1,255,337	57,013	52,306	65,382	73,228	78,459	82,120	104,611	156,917	78,459	23,538	47,075	78,459	
5-1/4 x 8	8"	20.644	96,000	1,387,302	66,157	60,694	75,868	84,972	91,042	95,290	121,389	182,083	91,042	27,313	54,625	91,042	
5-1/2 x 8	8-3/8"	22.706	96,000	1,525,861	76,229	69,935	87,419	97,909	104,903	109,798	139,871	209,806	104,903	31,471	62,942	104,903	
5-3/4 x 8	8-3/4"	24.866	96,000	1,671,013	87,276	80,069	100,087	112,097	120,104	125,709	160,139	240,208	120,104	36,031	72,062	120,104	
6 x 8	9-1/8"	27.124	96,000	1,822,760	99,340	91,138	113,923	127,593	136,707	143,087	182,276	273,414	136,707	41,012	82,024	136,707	

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

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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# HYTORC

TORQUE GUIDE FOR ISO R898 GRADE 8.8 STUD					REQUIRED TORQUE (FtLbs)									THESE TORQUE VALUES ARE BASED ON FRICTION FACTOR IN "CUSTOM" COLUMN			
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 <sup>2</sup> )	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 K=.300	CUSTOM (INSERT K) K=.300	30%	60%	100%	
3/4 x 10	1-1/4"	0.334	96,000	25,674	175	160	201	225	241	252	321	481	241	72	144	241	
7/8 x 9	1-7/16"	0.461	96,000	35,443	282	258	323	362	388	406	517	775	388	116	233	388	
1x 8	1-5/8"	0.605	96,000	46,498	422	387	484	542	581	608	775	1,162	581	174	349	581	
1-1/8 x 8	1-13/16"	0.790	96,000	60,676	620	569	711	796	853	893	1,138	1,707	853	256	512	853	
1-1/4 x 8	2"	0.999	96,000	76,738	871	799	999	1,119	1,199	1,255	1,599	2,398	1,199	360	719	1,199	
1-3/8 x 8	2-3/16"	1.233	96,000	94,685	1,183	1,085	1,356	1,519	1,627	1,703	2,170	3,255	1,627	488	976	1,627	
1-1/2 x 8	2-3/8"	1.491	96,000	114,515	1,560	1,431	1,789	2,004	2,147	2,247	2,863	4,294	2,147	644	1,288	2,147	
1-5/8 x 8	2-9/16"	1.774	96,000	136,230	2,011	1,845	2,306	2,583	2,767	2,896	3,690	5,534	2,767	830	1,660	2,767	
1-3/4 x 8	2-3/4"	2.081	96,000	159,828	2,541	2,331	2,914	3,263	3,496	3,659	4,662	6,992	3,496	1,049	2,098	3,496	
1-7/8 x 8	2-15/16"	2.413	96,000	185,310	3,156	2,895	3,619	4,054	4,343	4,546	5,791	8,686	4,343	1,303	2,606	4,343	
2 x 8	3-1/8"	2.769	96,000	212,677	3,864	3,545	4,431	4,962	5,317	5,565	7,089	10,634	5,317	1,595	3,190	5,317	
2-1/8 x 8	3-5/16"	3.150	96,000	241,927	4,670	4,284	5,355	5,998	6,426	6,726	8,568	12,852	6,426	1,928	3,856	6,426	
2-1/4 x 8	3-1/2"	3.555	96,000	273,062	5,581	5,120	6,400	7,168	7,680	8,038	10,240	15,360	7,680	2,304	4,608	7,680	
2-3/8 x 8	3-11/16"	3.985	96,000	306,080	6,603	6,058	7,572	8,481	9,087	9,511	12,116	18,174	9,087	2,726	5,452	9,087	
2-1/2 x 8	3-7/8"	4.440	96,000	340,983	7,743	7,104	8,880	9,945	10,656	11,153	14,208	21,311	10,656	3,197	6,393	10,656	
2-3/4 x 8	4-1/4"	5.422	96,000	416,439	10,402	9,543	11,929	13,361	14,315	14,983	19,087	28,630	14,315	4,295	8,589	14,315	
3 x 8	4-5/8"	6.503	96,000	499,432	13,610	12,486	15,607	17,480	18,729	19,603	24,972	37,457	18,729	5,619	11,237	18,729	
3-1/4 x 8	5"	7.682	96,000	589,961	17,416	15,978	19,973	22,369	23,967	25,086	31,956	47,934	23,967	7,190	14,380	23,967	
3-1/2 x 8	5-3/8"	8.959	96,000	688,026	21,873	20,067	25,084	28,094	30,101	31,506	40,135	60,202	30,101	9,030	18,061	30,101	
3-3/4 x 8	5-3/4"	10.334	96,000	793,627	27,033	24,801	31,001	34,721	37,201	38,937	49,602	74,403	37,201	11,160	22,321	37,201	
4 x 8	6-1/8"	11.807	96,000	906,764	32,946	30,225	37,782	42,316	45,338	47,454	60,451	90,676	45,338	13,601	27,203	45,338	
4-1/4 x 8	6-1/2"	13.378	96,000	1,027,436	39,663	36,388	45,485	50,944	54,583	57,130	72,777	109,165	54,583	16,375	32,750	54,583	
4-1/2 x 8	6-7/8"	15.047	96,000	1,155,645	47,237	43,337	54,171	60,671	65,005	68,039	86,673	130,010	65,005	19,502	39,003	65,005	
4-3/4 x 8	7-1/4"	16.815	96,000	1,291,390	55,718	51,118	63,897	71,565	76,676	80,255	102,235	153,353	76,676	23,003	46,006	76,676	
5 x 8	7-5/8"	18.681	96,000	1,434,671	65,158	59,778	74,722	83,689	89,667	93,851	119,556	179,334	89,667	26,900	53,800	89,667	
5-1/4 x 8	8"	20.644	96,000	1,585,488	75,608	69,365	86,706	97,111	104,048	108,903	138,730	208,095	104,048	31,214	62,429	104,048	
5-1/2 x 8	8-3/8"	22.706	96,000	1,743,841	87,119	79,926	99,908	111,896	119,889	125,484	159,852	239,778	119,889	35,967	71,933	119,889	
5-3/4 x 8	8-3/4"	24.866	96,000	1,909,729	99,744	91,508	114,385	128,111	137,262	143,667	183,016	274,524	137,262	41,179	82,357	137,262	
6 x 8	9-1/8"	27.124	96,000	2,083,154	113,532	104,158	130,197	145,821	156,237	163,528	208,315	312,473	156,237	46,871	93,742	156,237	

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# HYTORC

TORQUE GUIDE FOR ISO R898 GRADE 8.8 STUD					REQUIRED TORQUE (FtLbs)									THESE TORQUE VALUES ARE BASED ON FRICTION FACTOR IN "CUSTOM" COLUMN		
BOLT TENSION BASED ON				90	% YIELD									First Pass	Second Pass	All Subsequent Passes
BOLT SIZE DIA. x TPI	HEX NUT ACROSS FLAT	STRESS AREA (IN <sup>2</sup> )	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 K=.300	CUSTOM (INSERT K) K=.300	30%	60%	100%
3/4 x 10	1-1/4"	0.334	96,000	28,883	197	181	226	253	271	283	361	542	271	81	162	271
7/8 x 9	1-7/16"	0.461	96,000	39,874	317	291	363	407	436	456	581	872	436	131	262	436
1 x 8	1-5/8"	0.605	96,000	52,310	475	436	545	610	654	684	872	1,308	654	196	392	654
1-1/8 x 8	1-13/16"	0.790	96,000	68,260	698	640	800	896	960	1,005	1,280	1,920	960	288	576	960
1-1/4 x 8	2"	0.999	96,000	86,331	980	899	1,124	1,259	1,349	1,412	1,799	2,698	1,349	405	809	1,349
1-3/8 x 8	2-3/16"	1.233	96,000	106,520	1,330	1,221	1,526	1,709	1,831	1,916	2,441	3,662	1,831	549	1,098	1,831
1-1/2 x 8	2-3/8"	1.491	96,000	128,830	1,755	1,610	2,013	2,255	2,416	2,528	3,221	4,831	2,416	725	1,449	2,416
1-5/8 x 8	2-9/16"	1.774	96,000	153,258	2,262	2,075	2,594	2,906	3,113	3,258	4,151	6,226	3,113	934	1,868	3,113
1-3/4 x 8	2-3/4"	2.081	96,000	179,807	2,858	2,622	3,278	3,671	3,933	4,117	5,244	7,867	3,933	1,180	2,360	3,933
1-7/8 x 8	2-15/16"	2.413	96,000	208,474	3,551	3,257	4,072	4,560	4,886	5,114	6,515	9,772	4,886	1,466	2,932	4,886
2 x 8	3-1/8"	2.769	96,000	239,262	4,347	3,988	4,985	5,583	5,982	6,261	7,975	11,963	5,982	1,794	3,589	5,982
2-1/8 x 8	3-5/16"	3.150	96,000	272,168	5,253	4,820	6,025	6,748	7,229	7,567	9,639	14,459	7,229	2,169	4,338	7,229
2-1/4 x 8	3-1/2"	3.555	96,000	307,194	6,278	5,760	7,200	8,064	8,640	9,043	11,520	17,280	8,640	2,592	5,184	8,640
2-3/8 x 8	3-11/16"	3.985	96,000	344,340	7,428	6,815	8,519	9,541	10,223	10,700	13,630	20,445	10,223	3,067	6,134	10,223
2-1/2 x 8	3-7/8"	4.440	96,000	383,605	8,711	7,992	9,990	11,188	11,988	12,547	15,984	23,975	11,988	3,596	7,193	11,988
2-3/4 x 8	4-1/4"	5.422	96,000	468,494	11,703	10,736	13,420	15,031	16,104	16,856	21,473	32,209	16,104	4,831	9,663	16,104
3 x 8	4-5/8"	6.503	96,000	561,861	15,311	14,047	17,558	19,665	21,070	22,053	28,093	42,140	21,070	6,321	12,642	21,070
3-1/4 x 8	5"	7.682	96,000	663,706	19,593	17,975	22,469	25,166	26,963	28,221	35,951	53,926	26,963	8,089	16,178	26,963
3-1/2 x 8	5-3/8"	8.959	96,000	774,029	24,608	22,576	28,220	31,606	33,864	35,444	45,152	67,728	33,864	10,159	20,318	33,864
3-3/4 x 8	5-3/4"	10.334	96,000	892,830	30,412	27,901	34,876	39,061	41,851	43,804	55,802	83,703	41,851	12,555	25,111	41,851
4 x 8	6-1/8"	11.807	96,000	1,020,109	37,064	34,004	42,505	47,605	51,005	53,386	68,007	102,011	51,005	15,302	30,603	51,005
4-1/4 x 8	6-1/2"	13.378	96,000	1,155,866	44,621	40,937	51,171	57,312	61,405	64,271	81,874	122,811	61,405	18,422	36,843	61,405
4-1/2 x 8	6-7/8"	15.047	96,000	1,300,101	53,142	48,754	60,942	68,255	73,131	76,543	97,508	146,261	73,131	21,939	43,878	73,131
4-3/4 x 8	7-1/4"	16.815	96,000	1,452,814	62,683	57,507	71,884	80,510	86,261	90,286	115,014	172,522	86,261	25,878	51,756	86,261
5 x 8	7-5/8"	18.681	96,000	1,614,005	73,303	67,250	84,063	94,150	100,875	105,583	134,500	201,751	100,875	30,263	60,525	100,875
5-1/4 x 8	8"	20.644	96,000	1,783,674	85,059	78,036	97,545	109,250	117,054	122,516	156,071	234,107	117,054	35,116	70,232	117,054
5-1/2 x 8	8-3/8"	22.706	96,000	1,961,821	98,009	89,917	112,396	125,883	134,875	141,169	179,834	269,750	134,875	40,463	80,925	134,875
5-3/4 x 8	8-3/4"	24.866	96,000	2,148,446	112,212	102,946	128,683	144,125	154,420	161,626	205,893	308,839	154,420	46,326	92,652	154,420
6 x 8	9-1/8"	27.124	96,000	2,343,549	127,723	117,177	146,472	164,048	175,766	183,969	234,355	351,532	175,766	52,730	105,460	175,766

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# HYTORC

TORQUE GUIDE FOR ISO R898 GRADE 8.8 STUD					REQUIRED TORQUE (FtLbs)										THESE TORQUE VALUES ARE BASED ON FRICTION FACTOR IN "CUSTOM" COLUMN		
BOLT TENSION BASED ON				99	% YIELD										First Pass	Second Pass	All Subsequent Passes
BOLT SIZE DIA. x TPI	HEX NUT ACROSS FLAT	STRESS AREA (IN <sup>2</sup> )	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 K=.300	CUSTOM (INSERT K) K=.300	30%	60%	100%	
3/4 x 10	1-1/4"	0.334	96,000	31,771	216	199	248	278	298	312	397	596	298	89	179	298	
7/8 x 9	1-7/16"	0.461	96,000	43,861	349	320	400	448	480	502	640	959	480	144	288	480	
1x 8	1-5/8"	0.605	96,000	57,541	523	480	599	671	719	753	959	1,439	719	216	432	719	
1-1/8 x 8	1-13/16"	0.790	96,000	75,087	767	704	880	986	1,056	1,105	1,408	2,112	1,056	317	634	1056	
1-1/4 x 8	2"	0.999	96,000	94,964	1,078	989	1,237	1,385	1,484	1,553	1,978	2,968	1,484	445	890	1484	
1-3/8 x 8	2-3/16"	1.233	96,000	117,172	1,463	1,343	1,678	1,880	2,014	2,108	2,685	4,028	2,014	604	1208	2014	
1-1/2 x 8	2-3/8"	1.491	96,000	141,713	1,931	1,771	2,214	2,480	2,657	2,781	3,543	5,314	2,657	797	1594	2657	
1-5/8 x 8	2-9/16"	1.774	96,000	168,584	2,488	2,283	2,854	3,196	3,424	3,584	4,566	6,849	3,424	1027	2055	3424	
1-3/4 x 8	2-3/4"	2.081	96,000	197,787	3,144	2,884	3,605	4,038	4,327	4,529	5,769	8,653	4,327	1298	2596	4327	
1-7/8 x 8	2-15/16"	2.413	96,000	229,322	3,906	3,583	4,479	5,016	5,375	5,626	7,166	10,749	5,375	1612	3225	5375	
2 x 8	3-1/8"	2.769	96,000	263,188	4,781	4,386	5,483	6,141	6,580	6,887	8,773	13,159	6,580	1974	3948	6580	
2-1/8 x 8	3-5/16"	3.150	96,000	299,385	5,779	5,302	6,627	7,422	7,952	8,324	10,603	15,905	7,952	2386	4771	7952	
2-1/4 x 8	3-1/2"	3.555	96,000	337,914	6,906	6,336	7,920	8,870	9,504	9,947	12,672	19,008	9,504	2851	5702	9504	
2-3/8 x 8	3-11/16"	3.985	96,000	378,774	8,171	7,497	9,371	10,495	11,245	11,770	14,993	22,490	11,245	3373	6747	11245	
2-1/2 x 8	3-7/8"	4.440	96,000	421,966	9,582	8,791	10,989	12,307	13,186	13,802	17,582	26,373	13,186	3956	7912	13186	
2-3/4 x 8	4-1/4"	5.422	96,000	515,344	12,873	11,810	14,762	16,534	17,715	18,542	23,620	35,430	17,715	5314	10629	17715	
3 x 8	4-5/8"	6.503	96,000	618,047	16,842	15,451	19,314	21,632	23,177	24,258	30,902	46,354	23,177	6953	13906	23177	
3-1/4 x 8	5"	7.682	96,000	730,077	21,552	19,773	24,716	27,682	29,659	31,043	39,546	59,319	29,659	8898	17796	29659	
3-1/2 x 8	5-3/8"	8.959	96,000	851,432	27,068	24,833	31,042	34,767	37,250	38,988	49,667	74,500	37,250	11175	22350	37250	
3-3/4 x 8	5-3/4"	10.334	96,000	982,113	33,453	30,691	38,364	42,967	46,037	48,185	61,382	92,073	46,037	13811	27622	46037	
4 x 8	6-1/8"	11.807	96,000	1,122,120	40,770	37,404	46,755	52,366	56,106	58,724	74,808	112,212	56,106	16832	33664	56106	
4-1/4 x 8	6-1/2"	13.378	96,000	1,271,453	49,083	45,031	56,288	63,043	67,546	70,698	90,061	135,092	67,546	20264	40528	67546	
4-1/2 x 8	6-7/8"	15.047	96,000	1,430,111	58,456	53,629	67,036	75,081	80,444	84,198	107,258	160,887	80,444	24133	48266	80444	
4-3/4 x 8	7-1/4"	16.815	96,000	1,598,095	68,951	63,258	79,072	88,561	94,887	99,315	126,516	189,774	94,887	28466	56932	94887	
5 x 8	7-5/8"	18.681	96,000	1,775,405	80,633	73,975	92,469	103,565	110,963	116,141	147,950	221,926	110,963	33289	66578	110963	
5-1/4 x 8	8"	20.644	96,000	1,962,041	93,565	85,839	107,299	120,175	128,759	134,768	171,679	257,518	128,759	38628	77255	128759	
5-1/2 x 8	8-3/8"	22.706	96,000	2,158,003	107,810	98,908	123,636	138,472	148,363	155,286	197,817	296,725	148,363	44509	89018	148363	
5-3/4 x 8	8-3/4"	24.866	96,000	2,363,290	123,433	113,241	141,551	158,537	169,861	177,788	226,482	339,723	169,861	50958	101917	169861	
6 x 8	9-1/8"	27.124	96,000	2,577,903	140,496	128,895	161,119	180,453	193,343	202,365	257,790	386,686	193,343	58003	116006	193343	

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