

BOLT LOAD (METRIC) (MATERIAL STANDARD 1.7711)

40% - 99% YIELD



Southwest Texas	West Texas	Main Office	Southeast Texas	Central & East Texas
4802 Baldwin Blvd.	3508 S County Rd 1290	12420 Texaco Rd	2484 W Cardinal #4	7900 Rodeo Trl. #500
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

BOLT LOADS

TORQUE GUIDE FOR MATERIAL STANDARD 1.7711						REQUIRED TORQUE (N-m)						
MINIMUM YIELD (Mpa)			700									
BOLT LOAD BASED ON			40			PERCENT YIELD						
BOLT SIZE DIA. x P	HEX NUT ACROSS FLAT (mm)	STRESS AREA (mm) ²	BOLT LOAD (kN)	LoaDISC TS 801 Moly K=.109	MOLY DISULFIDE K=.100	MOLY/LEAD OXIDE/GRAPHITE K=.125	COPPER & GRAPHITE K=.140	NICKEL & GRAPHITE K=.150	API SA2 K=.157	MACHIN OIL K=.200	DRY STEEL K=.300	CUSTOM (INSERT K)
												0.109
M20x2.5	30	245	68.55	149	137	171	192	206	215	274	411	149
M22x2.5	32	303	84.96	204	187	234	262	280	293	374	561	204
M24x3	36	353	98.71	258	237	296	332	355	372	474	711	258
M27x3	41	459	128.64	379	347	434	486	521	545	695	1,042	379
M30x3.5	46	561	156.97	513	471	589	659	706	739	942	1,413	513
M33x3.5	50	694	194.20	699	641	801	897	961	1,006	1,282	1,923	699
M36x4	55	817	228.69	897	823	1,029	1,153	1,235	1,293	1,647	2,470	897
M39x4	60	976	273.22	1,161	1,066	1,332	1,492	1,598	1,673	2,131	3,197	1,161
M42x4.5	65	1121	313.87	1,437	1,318	1,648	1,846	1,977	2,070	2,637	3,955	1,437
M45x4.5	70	1306	365.70	1,794	1,646	2,057	2,304	2,468	2,584	3,291	4,937	1,794
M48x5	75	1473	412.50	2,158	1,980	2,475	2,772	2,970	3,109	3,960	5,940	2,158
M52x5	80	1758	492.21	2,790	2,560	3,199	3,583	3,839	4,018	5,119	7,679	2,790
M56x5.5	85	2030	568.43	3,470	3,183	3,979	4,456	4,775	4,998	6,366	9,550	3,470
M60x5.5	90	2362	661.39	4,326	3,968	4,960	5,556	5,953	6,230	7,937	11,905	4,326
M64x6	95	2676	749.30	5,227	4,796	5,994	6,714	7,193	7,529	9,591	14,387	5,227
M68x6	100	3055	855.52	6,341	5,818	7,272	8,145	8,726	9,133	11,635	17,453	6,341
M72x6	105	3460	968.77	7,603	6,975	8,719	9,765	10,463	10,951	13,950	20,925	7,603
M76x6	110	3889	1,089.05	9,022	8,277	10,346	11,588	12,415	12,995	16,554	24,830	9,022
M80x6	115	4344	1,216.38	10,607	9,731	12,164	13,623	14,597	15,278	19,462	29,193	10,607
M90x6	130	5591	1,565.47	15,357	14,089	17,612	19,725	21,134	22,120	28,179	42,268	15,357
M100x6	145	6995	1,958.55	21,348	19,586	24,482	27,420	29,378	30,749	39,171	58,757	21,348
M110x6	155	8556	2,395.61	28,723	26,352	32,940	36,892	39,528	41,372	52,704	79,055	28,723
M125x6	180	11192	3,133.67	42,696	39,171	48,964	54,839	58,756	61,498	78,342	117,513	42,696

TORQUE GUIDE FOR MATERIAL STANDARD 1.7711						REQUIRED TORQUE (N-m)						
MINIMUM YIELD (Mpa)			700									
BOLT LOAD BASED ON			50			PERCENT YIELD						
BOLT SIZE DIA. x P	HEX NUT ACROSS FLAT (mm)	STRESS AREA (mm) ²	BOLT LOAD (kN)	LoaDISC TS 801 MOLY K=.109	MOLY DISULFIDE K=.100	MOLY/LEAD OXIDE/GRAPHITE K=.125	COPPER & GRAPHITE K=.140	NICKEL & GRAPHITE K=.150	API SA2 K=.157	MACHIN OIL K=.200	DRY STEEL K=.300	CUSTOM (INSERT K)
												0.109
M20x2.5	30	245	85.68	187	171	214	240	257	269	343	514	187
M22x2.5	32	303	106.20	255	234	292	327	350	367	467	701	255
M24x3	36	353	123.38	323	296	370	415	444	465	592	888	323
M27x3	41	459	160.80	473	434	543	608	651	682	868	1,302	473
M30x3.5	46	561	196.22	642	589	736	824	883	924	1,177	1,766	642
M33x3.5	50	694	242.76	873	801	1,001	1,122	1,202	1,258	1,602	2,403	873
M36x4	55	817	285.87	1,122	1,029	1,286	1,441	1,544	1,616	2,058	3,087	1,122
M39x4	60	976	341.53	1,452	1,332	1,665	1,865	1,998	2,091	2,664	3,996	1,452
M42x4.5	65	1121	392.34	1,796	1,648	2,060	2,307	2,472	2,587	3,296	4,943	1,796
M45x4.5	70	1306	457.12	2,242	2,057	2,571	2,880	3,086	3,230	4,114	6,171	2,242
M48x5	75	1473	515.63	2,698	2,475	3,094	3,465	3,713	3,886	4,950	7,425	2,698
M52x5	80	1758	615.27	3,487	3,199	3,999	4,479	4,799	5,023	6,399	9,598	3,487
M56x5.5	85	2030	710.54	4,337	3,979	4,974	5,571	5,969	6,247	7,958	11,937	4,337
M60x5.5	90	2362	826.74	5,407	4,960	6,201	6,945	7,441	7,788	9,921	14,881	5,407
M64x6	95	2676	936.63	6,534	5,994	7,493	8,392	8,992	9,411	11,989	17,983	6,534
M68x6	100	3055	1,069.40	7,926	7,272	9,090	10,181	10,908	11,417	14,544	21,816	7,926
M72x6	105	3460	1,210.96	9,504	8,719	10,899	12,206	13,078	13,689	17,438	26,157	9,504
M76x6	110	3889	1,361.32	11,277	10,346	12,932	14,484	15,519	16,243	20,692	31,038	11,277
M80x6	115	4344	1,520.47	13,258	12,164	15,205	17,029	18,246	19,097	24,328	36,491	13,258
M90x6	130	5591	1,956.84	19,197	17,612	22,014	24,656	26,417	27,650	35,223	52,835	19,197
M100x6	145	6995	2,448.19	26,685	24,482	30,602	34,275	36,723	38,437	48,964	73,446	26,685
M110x6	155	8556	2,994.52	35,904	32,940	41,175	46,116	49,410	51,715	65,879	98,819	35,904
M125x6	180	11192	3,917.09	53,370	48,964	61,205	68,549	73,445	76,873	97,927	146,891	53,370

TORQUE GUIDE FOR MATERIAL STANDARD 1.7711						REQUIRED TORQUE (N-m)						
MINIMUM YIELD (Mpa)			700									
BOLT LOAD BASED ON			60			PERCENT YIELD						
BOLT SIZE DIA. x P	HEX NUT ACROSS FLAT (mm)	STRESS AREA (mm) ²	BOLT LOAD (kN)	LoaDISC TS 801 MOLY K=.109	MOLY DISULFIDE K=.100	MOLY/LEAD OXIDE/GRAPHITE K=.125	COPPER & GRAPHITE K=.140	NICKEL & GRAPHITE K=.150	API SA2 K=.157	MACHIN OIL K=.200	DRY STEEL K=.300	CUSTOM (INSERT K)
												0.109
M20x2.5	30	245	102.82	224	206	257	288	308	323	411	617	224
M22x2.5	32	303	127.43	306	280	350	392	421	440	561	841	306
M24x3	36	353	148.06	387	355	444	497	533	558	711	1,066	387
M27x3	41	459	192.96	568	521	651	729	781	818	1,042	1,563	568
M30x3.5	46	561	235.46	770	706	883	989	1,060	1,109	1,413	2,119	770
M33x3.5	50	694	291.31	1,048	961	1,202	1,346	1,442	1,509	1,923	2,884	1,048
M36x4	55	817	343.04	1,346	1,235	1,544	1,729	1,852	1,939	2,470	3,705	1,346
M39x4	60	976	409.84	1,742	1,598	1,998	2,238	2,398	2,509	3,197	4,795	1,742
M42x4.5	65	1121	470.81	2,155	1,977	2,472	2,768	2,966	3,104	3,955	5,932	2,155
M45x4.5	70	1306	548.55	2,691	2,468	3,086	3,456	3,703	3,875	4,937	7,405	2,691
M48x5	75	1473	618.75	3,237	2,970	3,713	4,158	4,455	4,663	5,940	8,910	3,237
M52x5	80	1758	738.32	4,185	3,839	4,799	5,375	5,759	6,028	7,679	11,518	4,185
M56x5.5	85	2030	852.65	5,205	4,775	5,969	6,685	7,162	7,496	9,550	14,324	5,205
M60x5.5	90	2362	992.09	6,488	5,953	7,441	8,334	8,929	9,345	11,905	17,858	6,488
M64x6	95	2676	1,123.96	7,841	7,193	8,992	10,071	10,790	11,294	14,387	21,580	7,841
M68x6	100	3055	1,283.27	9,512	8,726	10,908	12,217	13,089	13,700	17,453	26,179	9,512
M72x6	105	3460	1,453.15	11,404	10,463	13,078	14,648	15,694	16,426	20,925	31,388	11,404
M76x6	110	3889	1,633.58	13,533	12,415	15,519	17,381	18,623	19,492	24,830	37,246	13,533
M80x6	115	4344	1,824.56	15,910	14,597	18,246	20,435	21,895	22,917	29,193	43,790	15,910
M90x6	130	5591	2,348.21	23,036	21,134	26,417	29,587	31,701	33,180	42,268	63,402	23,036
M100x6	145	6995	2,937.83	32,022	29,378	36,723	41,130	44,067	46,124	58,757	88,135	32,022
M110x6	155	8556	3,593.42	43,085	39,528	49,410	55,339	59,291	62,058	79,055	118,583	43,085
M125x6	180	11192	4,700.51	64,044	58,756	73,445	82,259	88,135	92,248	117,513	176,269	64,044

TORQUE GUIDE FOR MATERIAL STANDARD 1.7711						REQUIRED TORQUE (N-m)						
MINIMUM YIELD (Mpa)			700	PERCENT YIELD								
BOLT LOAD BASED ON			70									
BOLT SIZE DIA. x P	HEX NUT ACROSS FLAT (mm)	STRESS AREA (mm) ²	BOLT LOAD (kN)	LoaDISC TS 801 MOLY K=.109	MOLY DISULFIDE K=.100	MOLY/LEAD OXIDE/GRAPHITE K=.125	COPPER & GRAPHITE K=.140	NICKEL & GRAPHITE K=.150	API SA2 K=.157	MACHIN OIL K=.200	DRY STEEL K=.300	CUSTOM (INSERT K)
												0.109
M20x2.5	30	245	119.96	262	240	300	336	360	377	480	720	262
M22x2.5	32	303	148.67	357	327	409	458	491	514	654	981	357
M24x3	36	353	172.74	452	415	518	580	622	651	829	1,244	452
M27x3	41	459	225.12	663	608	760	851	912	954	1,216	1,823	663
M30x3.5	46	561	274.70	898	824	1,030	1,154	1,236	1,294	1,648	2,472	898
M33x3.5	50	694	339.86	1,222	1,122	1,402	1,570	1,682	1,761	2,243	3,365	1,222
M36x4	55	817	400.21	1,570	1,441	1,801	2,017	2,161	2,262	2,882	4,322	1,570
M39x4	60	976	478.14	2,033	1,865	2,331	2,611	2,797	2,928	3,729	5,594	2,033
M42x4.5	65	1121	549.27	2,515	2,307	2,884	3,230	3,460	3,622	4,614	6,921	2,515
M45x4.5	70	1306	639.97	3,139	2,880	3,600	4,032	4,320	4,521	5,760	8,640	3,139
M48x5	75	1473	721.88	3,777	3,465	4,331	4,851	5,198	5,440	6,930	10,395	3,777
M52x5	80	1758	861.38	4,882	4,479	5,599	6,271	6,719	7,032	8,958	13,437	4,882
M56x5.5	85	2030	994.75	6,072	5,571	6,963	7,799	8,356	8,746	11,141	16,712	6,072
M60x5.5	90	2362	1,157.44	7,570	6,945	8,681	9,722	10,417	10,903	13,889	20,834	7,570
M64x6	95	2676	1,311.28	9,148	8,392	10,490	11,749	12,588	13,176	16,784	25,177	9,148
M68x6	100	3055	1,497.15	11,097	10,181	12,726	14,253	15,271	15,984	20,361	30,542	11,097
M72x6	105	3460	1,695.34	13,305	12,206	15,258	17,089	18,310	19,164	24,413	36,619	13,305
M76x6	110	3889	1,905.84	15,788	14,484	18,105	20,278	21,727	22,741	28,969	43,453	15,788
M80x6	115	4344	2,128.66	18,562	17,029	21,287	23,841	25,544	26,736	34,059	51,088	18,562
M90x6	130	5591	2,739.58	26,875	24,656	30,820	34,519	36,984	38,710	49,312	73,969	26,875
M100x6	145	6995	3,427.47	37,359	34,275	42,843	47,985	51,412	53,811	68,549	102,824	37,359
M110x6	155	8556	4,192.33	50,266	46,116	57,644	64,562	69,173	72,401	92,231	138,347	50,266
M125x6	180	11192	5,483.93	74,719	68,549	85,686	95,969	102,824	107,622	137,098	205,647	74,719

TORQUE GUIDE FOR MATERIAL STANDARD 1.7711						REQUIRED TORQUE (N-m)						
MINIMUM YIELD (Mpa)			700	PERCENT YIELD								
BOLT LOAD BASED ON			80									
BOLT SIZE DIA. x P	HEX NUT ACROSS FLAT (mm)	STRESS AREA (mm) ²	BOLT LOAD (kN)	LoaDISC TS 801 MOLY K=.109	MOLY DISULFIDE K=.100	MOLY/LEAD OXIDE/GRAPHITE K=.125	COPPER & GRAPHITE K=.140	NICKEL & GRAPHITE K=.150	API SA2 K=.157	MACHIN OIL K=.200	DRY STEEL K=.300	CUSTOM (INSERT K)
												0.109
M20x2.5	30	245	137.09	299	274	343	384	411	430	548	823	299
M22x2.5	32	303	169.91	407	374	467	523	561	587	748	1,121	407
M24x3	36	353	197.41	516	474	592	663	711	744	948	1,421	516
M27x3	41	459	257.28	757	695	868	973	1,042	1,091	1,389	2,084	757
M30x3.5	46	561	313.95	1,027	942	1,177	1,319	1,413	1,479	1,884	2,826	1,027
M33x3.5	50	694	388.41	1,397	1,282	1,602	1,794	1,923	2,012	2,563	3,845	1,397
M36x4	55	817	457.39	1,795	1,647	2,058	2,305	2,470	2,585	3,293	4,940	1,795
M39x4	60	976	546.45	2,323	2,131	2,664	2,984	3,197	3,346	4,262	6,393	2,323
M42x4.5	65	1121	627.74	2,874	2,637	3,296	3,691	3,955	4,139	5,273	7,910	2,874
M45x4.5	70	1306	731.40	3,587	3,291	4,114	4,608	4,937	5,167	6,583	9,874	3,587
M48x5	75	1473	825.00	4,316	3,960	4,950	5,544	5,940	6,217	7,920	11,880	4,316
M52x5	80	1758	984.43	5,580	5,119	6,399	7,167	7,679	8,037	10,238	15,357	5,580
M56x5.5	85	2030	1,136.86	6,939	6,366	7,958	8,913	9,550	9,995	12,733	19,099	6,939
M60x5.5	90	2362	1,322.79	8,651	7,937	9,921	11,111	11,905	12,461	15,873	23,810	8,651
M64x6	95	2676	1,498.61	10,454	9,591	11,989	13,428	14,387	15,058	19,182	28,773	10,454
M68x6	100	3055	1,711.03	12,682	11,635	14,544	16,289	17,453	18,267	23,270	34,905	12,682
M72x6	105	3460	1,937.53	15,206	13,950	17,438	19,530	20,925	21,902	27,900	41,851	15,206
M76x6	110	3889	2,178.10	18,043	16,554	20,692	23,175	24,830	25,989	33,107	49,661	18,043
M80x6	115	4344	2,432.75	21,214	19,462	24,328	27,247	29,193	30,555	38,924	58,386	21,214
M90x6	130	5591	3,130.95	30,715	28,179	35,223	39,450	42,268	44,240	56,357	84,536	30,715
M100x6	145	6995	3,917.11	42,696	39,171	48,964	54,839	58,757	61,499	78,342	117,513	42,696
M110x6	155	8556	4,791.23	57,447	52,704	65,879	73,785	79,055	82,745	105,407	158,111	57,447
M125x6	180	11192	6,267.35	85,393	78,342	97,927	109,679	117,513	122,997	156,684	235,026	85,393

TORQUE GUIDE FOR MATERIAL STANDARD 1.7711						REQUIRED TORQUE (N-m)						
MINIMUM YIELD (Mpa)			700	PERCENT YIELD								
BOLT LOAD BASED ON			90									
BOLT SIZE DIA. x P	HEX NUT ACROSS FLAT (mm)	STRESS AREA (mm) ²	BOLT LOAD (kN)	LoaDISC TS 801 MOLY K=.109	MOLY DISULFIDE K=.100	MOLY/LEAD OXIDE/GRAPHITE K=.125	COPPER & GRAPHITE K=.140	NICKEL & GRAPHITE K=.150	API SA2 K=.157	MACHIN OIL K=.200	DRY STEEL K=.300	CUSTOM (INSERT K)
												0.109
M20x2.5	30	245	154.23	336	308	386	432	463	484	617	925	336
M22x2.5	32	303	191.15	458	421	526	589	631	660	841	1,262	458
M24x3	36	353	222.09	581	533	666	746	800	837	1,066	1,599	581
M27x3	41	459	289.44	852	781	977	1,094	1,172	1,227	1,563	2,344	852
M30x3.5	46	561	353.19	1,155	1,060	1,324	1,483	1,589	1,664	2,119	3,179	1,155
M33x3.5	50	694	436.96	1,572	1,442	1,802	2,019	2,163	2,264	2,884	4,326	1,572
M36x4	55	817	514.56	2,019	1,852	2,316	2,593	2,779	2,908	3,705	5,557	2,019
M39x4	60	976	614.75	2,613	2,398	2,997	3,357	3,596	3,764	4,795	7,193	2,613
M42x4.5	65	1121	706.21	3,233	2,966	3,708	4,153	4,449	4,657	5,932	8,898	3,233
M45x4.5	70	1306	822.82	4,036	3,703	4,628	5,184	5,554	5,813	7,405	11,108	4,036
M48x5	75	1473	928.13	4,856	4,455	5,569	6,237	6,683	6,994	8,910	13,365	4,856
M52x5	80	1758	1,107.48	6,277	5,759	7,199	8,062	8,638	9,041	11,518	17,277	6,277
M56x5.5	85	2030	1,278.97	7,807	7,162	8,953	10,027	10,743	11,245	14,324	21,487	7,807
M60x5.5	90	2362	1,488.13	9,732	8,929	11,161	12,500	13,393	14,018	17,858	26,786	9,732
M64x6	95	2676	1,685.93	11,761	10,790	13,487	15,106	16,185	16,940	21,580	32,370	11,761
M68x6	100	3055	1,924.91	14,267	13,089	16,362	18,325	19,634	20,550	26,179	39,268	14,267
M72x6	105	3460	2,179.72	17,106	15,694	19,618	21,972	23,541	24,640	31,388	47,082	17,106
M76x6	110	3889	2,450.37	20,299	18,623	23,278	26,072	27,934	29,238	37,246	55,868	20,299
M80x6	115	4344	2,736.85	23,865	21,895	27,368	30,653	32,842	34,375	43,790	65,684	23,865
M90x6	130	5591	3,522.31	34,554	31,701	39,626	44,381	47,551	49,770	63,402	95,102	34,554
M100x6	145	6995	4,406.74	48,034	44,067	55,084	61,694	66,101	69,186	88,135	132,202	48,034
M110x6	155	8556	5,390.13	64,628	59,291	74,114	83,008	88,937	93,088	118,583	177,874	64,628
M125x6	180	11192	7,050.77	96,067	88,135	110,168	123,388	132,202	138,371	176,269	264,404	96,067

TORQUE GUIDE FOR MATERIAL STANDARD 1.7711						REQUIRED TORQUE (N-m)						
MINIMUM YIELD (Mpa)			700	PERCENT YIELD								
BOLT LOAD BASED ON			99									
BOLT SIZE DIA. x P	HEX NUT ACROSS FLAT (mm)	STRESS AREA (mm) ²	BOLT LOAD (kN)	LoaDISC TS 801 MOLY K=.109	MOLY DISULFIDE K=.100	MOLY/LEAD OXIDE/GRAPHITE K=.125	COPPER & GRAPHITE K=.140	NICKEL & GRAPHITE K=.150	API SA2 K=.157	MACHIN OIL K=.200	DRY STEEL K=.300	CUSTOM (INSERT K)
												0.109
M20x2.5	30	245	169.65	370	339	424	475	509	533	679	1,018	370
M22x2.5	32	303	210.27	504	463	578	648	694	726	925	1,388	504
M24x3	36	353	244.30	639	586	733	821	879	921	1,173	1,759	639
M27x3	41	459	318.38	937	860	1,075	1,203	1,289	1,350	1,719	2,579	937
M30x3.5	46	561	388.51	1,270	1,166	1,457	1,632	1,748	1,830	2,331	3,497	1,270
M33x3.5	50	694	480.66	1,729	1,586	1,983	2,221	2,379	2,490	3,172	4,758	1,729
M36x4	55	817	566.02	2,221	2,038	2,547	2,853	3,056	3,199	4,075	6,113	2,221
M39x4	60	976	676.23	2,875	2,637	3,297	3,692	3,956	4,141	5,275	7,912	2,875
M42x4.5	65	1121	776.83	3,556	3,263	4,078	4,568	4,894	5,122	6,525	9,788	3,556
M45x4.5	70	1306	905.10	4,440	4,073	5,091	5,702	6,109	6,395	8,146	12,219	4,440
M48x5	75	1473	1,020.94	5,342	4,901	6,126	6,861	7,351	7,694	9,801	14,702	5,342
M52x5	80	1758	1,218.23	6,905	6,335	7,919	8,869	9,502	9,946	12,670	19,004	6,905
M56x5.5	85	2030	1,406.86	8,588	7,878	9,848	11,030	11,818	12,369	15,757	23,635	8,588
M60x5.5	90	2362	1,636.95	10,706	9,822	12,277	13,750	14,733	15,420	19,643	29,465	10,706
M64x6	95	2676	1,854.53	12,937	11,869	14,836	16,617	17,803	18,634	23,738	35,607	12,937
M68x6	100	3055	2,117.40	15,694	14,398	17,998	20,158	21,598	22,605	28,797	43,195	15,694
M72x6	105	3460	2,397.70	18,817	17,263	21,579	24,169	25,895	27,104	34,527	51,790	18,817
M76x6	110	3889	2,695.40	22,329	20,485	25,606	28,679	30,728	32,162	40,970	61,455	22,329
M80x6	115	4344	3,010.53	26,252	24,084	30,105	33,718	36,126	37,812	48,168	72,253	26,252
M90x6	130	5591	3,874.55	38,009	34,871	43,589	48,819	52,306	54,747	69,742	104,613	38,009
M100x6	145	6995	4,847.42	52,837	48,474	60,593	67,864	72,711	76,104	96,948	145,423	52,837
M110x6	155	8556	5,929.15	71,090	65,221	81,526	91,309	97,831	102,396	130,441	195,662	71,090
M125x6	180	11192	7,755.84	105,673	96,948	121,185	135,727	145,422	152,208	193,896	290,844	105,673