

BOLT LOAD (METRIC) SOCKET HEAD CAP SCREWS (MATERIAL 1.7709)

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 1.7709						REQUIRED TORQUE (N-m)						
MINIMUM YIELD (Mpa)			550									
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	MACHINE OIL K=.200	DRY STEEL K=.300	CUSTOM (INSERT K) K=.300
M20x2.5	30	245	53.86	117	108	135	151	162	169	215	323	117
M22x2.5	32	303	66.75	160	147	184	206	220	231	294	441	160
M24x3	36	353	77.56	203	186	233	261	279	292	372	558	203
M27x3	41	459	101.07	297	273	341	382	409	428	546	819	297
M30x3.5	46	561	123.34	403	370	463	518	555	581	740	1,110	403
M33x3.5	50	694	152.59	549	504	629	705	755	791	1,007	1,511	549
M36x4	55	817	179.69	705	647	809	906	970	1,016	1,294	1,941	705
M39x4	60	976	214.68	913	837	1,047	1,172	1,256	1,314	1,674	2,512	913
M42x4.5	65	1121	246.61	1,129	1,036	1,295	1,450	1,554	1,626	2,072	3,107	1,129
M45x4.5	70	1306	287.33	1,409	1,293	1,616	1,810	1,940	2,030	2,586	3,879	1,409
M48x5	75	1473	324.11	1,696	1,556	1,945	2,178	2,334	2,442	3,111	4,667	1,696
M52x5	80	1758	386.74	2,192	2,011	2,514	2,815	3,017	3,157	4,022	6,033	2,192
M56x5.5	85	2030	446.62	2,726	2,501	3,126	3,502	3,752	3,927	5,002	7,503	2,726
M60x5.5	90	2362	519.67	3,399	3,118	3,897	4,365	4,677	4,895	6,236	9,354	3,399
M64x6	95	2676	588.74	4,107	3,768	4,710	5,275	5,652	5,916	7,536	11,304	4,107
M68x6	100	3055	672.19	4,982	4,571	5,714	6,399	6,856	7,176	9,142	13,713	4,982
M72x6	105	3460	761.17	5,974	5,480	6,851	7,673	8,221	8,604	10,961	16,441	5,974
M76x6	110	3889	855.68	7,088	6,503	8,129	9,104	9,755	10,210	13,006	19,510	7,088
M80x6	115	4344	955.72	8,334	7,646	9,557	10,704	11,469	12,004	15,292	22,937	8,334
M90x6	130	5591	1,230.01	12,066	11,070	13,838	15,498	16,605	17,380	22,140	33,210	12,066
M100x6	145	6995	1,538.86	16,774	15,389	19,236	21,544	23,083	24,160	30,777	46,166	16,774
M110x6	155	8556	1,882.27	22,568	20,705	25,881	28,987	31,057	32,507	41,410	62,115	22,568
M125x6	180	11192	2,462.17	33,547	30,777	38,471	43,088	46,166	48,320	61,554	92,331	33,547

TORQUE GUIDE FOR MATERIAL STANDARD 1.7709						REQUIRED TORQUE (N-m)						
MINIMUM YIELD (Mpa)			550	PERCENT YIELD								
BOLT LOAD BASED ON			50									
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	MACHINE OIL K=.200	DRY STEEL K=.300	CUSTOM (INSERT K) K=.300
												0.109
M20x2.5	30	245	67.32	147	135	168	189	202	211	269	404	147
M22x2.5	32	303	83.44	200	184	229	257	275	288	367	551	200
M24x3	36	353	96.94	254	233	291	326	349	365	465	698	254
M27x3	41	459	126.34	372	341	426	478	512	536	682	1,023	372
M30x3.5	46	561	154.17	504	463	578	648	694	726	925	1,388	504
M33x3.5	50	694	190.74	686	629	787	881	944	988	1,259	1,888	686
M36x4	55	817	224.61	881	809	1,011	1,132	1,213	1,269	1,617	2,426	881
M39x4	60	976	268.34	1,141	1,047	1,308	1,465	1,570	1,643	2,093	3,140	1,141
M42x4.5	65	1121	308.27	1,411	1,295	1,618	1,813	1,942	2,033	2,589	3,884	1,411
M45x4.5	70	1306	359.17	1,762	1,616	2,020	2,263	2,424	2,538	3,233	4,849	1,762
M48x5	75	1473	405.14	2,120	1,945	2,431	2,723	2,917	3,053	3,889	5,834	2,120
M52x5	80	1758	483.43	2,740	2,514	3,142	3,519	3,771	3,947	5,028	7,541	2,740
M56x5.5	85	2030	558.28	3,408	3,126	3,908	4,377	4,690	4,908	6,253	9,379	3,408
M60x5.5	90	2362	649.58	4,248	3,897	4,872	5,456	5,846	6,119	7,795	11,692	4,248
M64x6	95	2676	735.92	5,134	4,710	5,887	6,594	7,065	7,395	9,420	14,130	5,134
M68x6	100	3055	840.24	6,228	5,714	7,142	7,999	8,570	8,970	11,427	17,141	6,228
M72x6	105	3460	951.47	7,467	6,851	8,563	9,591	10,276	10,755	13,701	20,552	7,467
M76x6	110	3889	1,069.60	8,861	8,129	10,161	11,381	12,193	12,763	16,258	24,387	8,861
M80x6	115	4344	1,194.66	10,417	9,557	11,947	13,380	14,336	15,005	19,114	28,672	10,417
M90x6	130	5591	1,537.52	15,083	13,838	17,297	19,373	20,756	21,725	27,675	41,513	15,083
M100x6	145	6995	1,923.58	20,967	19,236	24,045	26,930	28,854	30,200	38,472	57,707	20,967
M110x6	155	8556	2,352.84	28,211	25,881	32,351	36,234	38,822	40,633	51,762	77,644	28,211
M125x6	180	11192	3,077.72	41,934	38,471	48,089	53,860	57,707	60,400	76,943	115,414	41,934

TORQUE GUIDE FOR MATERIAL STANDARD 1.7709						REQUIRED TORQUE (N-m)						
MINIMUM YIELD (Mpa)			550	PERCENT YIELD								
BOLT LOAD BASED ON			60									
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	MACHINE OIL K=.200	DRY STEEL K=.300	CUSTOM (INSERT K) K=.300
												0.109
M20x2.5	30	245	80.79	176	162	202	226	242	254	323	485	176
M22x2.5	32	303	100.13	240	220	275	308	330	346	441	661	240
M24x3	36	353	116.33	304	279	349	391	419	438	558	838	304
M27x3	41	459	151.61	446	409	512	573	614	643	819	1,228	446
M30x3.5	46	561	185.00	605	555	694	777	833	871	1,110	1,665	605
M33x3.5	50	694	228.88	823	755	944	1,057	1,133	1,186	1,511	2,266	823
M36x4	55	817	269.53	1,058	970	1,213	1,358	1,455	1,523	1,941	2,911	1,058
M39x4	60	976	322.01	1,369	1,256	1,570	1,758	1,884	1,972	2,512	3,768	1,369
M42x4.5	65	1121	369.92	1,693	1,554	1,942	2,175	2,330	2,439	3,107	4,661	1,693
M45x4.5	70	1306	431.00	2,114	1,940	2,424	2,715	2,909	3,045	3,879	5,819	2,114
M48x5	75	1473	486.16	2,544	2,334	2,917	3,267	3,500	3,664	4,667	7,001	2,544
M52x5	80	1758	580.11	3,288	3,017	3,771	4,223	4,525	4,736	6,033	9,050	3,288
M56x5.5	85	2030	669.94	4,089	3,752	4,690	5,252	5,627	5,890	7,503	11,255	4,089
M60x5.5	90	2362	779.50	5,098	4,677	5,846	6,548	7,015	7,343	9,354	14,031	5,098
M64x6	95	2676	883.11	6,161	5,652	7,065	7,913	8,478	8,873	11,304	16,956	6,161
M68x6	100	3055	1,008.29	7,473	6,856	8,570	9,599	10,285	10,764	13,713	20,569	7,473
M72x6	105	3460	1,141.76	8,961	8,221	10,276	11,509	12,331	12,906	16,441	24,662	8,961
M76x6	110	3889	1,283.53	10,633	9,755	12,193	13,657	14,632	15,315	19,510	29,264	10,633
M80x6	115	4344	1,433.59	12,501	11,469	14,336	16,056	17,203	18,006	22,937	34,406	12,501
M90x6	130	5591	1,845.02	18,100	16,605	20,756	23,247	24,908	26,070	33,210	49,816	18,100
M100x6	145	6995	2,308.29	25,160	23,083	28,854	32,316	34,624	36,240	46,166	69,249	25,160
M110x6	155	8556	2,823.40	33,853	31,057	38,822	43,480	46,586	48,760	62,115	93,172	33,853
M125x6	180	11192	3,693.26	50,321	46,166	57,707	64,632	69,249	72,480	92,331	138,497	50,321

TORQUE GUIDE FOR MATERIAL STANDARD 1.7709						REQUIRED TORQUE (N-m)						
MINIMUM YIELD (Mpa)			550	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	MACHINE OIL K=.200	DRY STEEL K=.300	CUSTOM (INSERT K) K=.300
M20x2.5	30	245	94.25	205	189	236	264	283	296	377	566	205
M22x2.5	32	303	116.81	280	257	321	360	385	403	514	771	280
M24x3	36	353	135.72	355	326	407	456	489	511	651	977	355
M27x3	41	459	176.88	521	478	597	669	716	750	955	1,433	521
M30x3.5	46	561	215.84	706	648	809	907	971	1,017	1,295	1,943	706
M33x3.5	50	694	267.03	961	881	1,102	1,234	1,322	1,383	1,762	2,644	961
M36x4	55	817	314.45	1,234	1,132	1,415	1,585	1,698	1,777	2,264	3,396	1,234
M39x4	60	976	375.68	1,597	1,465	1,831	2,051	2,198	2,300	2,930	4,395	1,597
M42x4.5	65	1121	431.57	1,976	1,813	2,266	2,538	2,719	2,846	3,625	5,438	1,976
M45x4.5	70	1306	502.83	2,466	2,263	2,828	3,168	3,394	3,553	4,526	6,788	2,466
M48x5	75	1473	567.19	2,968	2,723	3,403	3,812	4,084	4,274	5,445	8,168	2,968
M52x5	80	1758	676.80	3,836	3,519	4,399	4,927	5,279	5,525	7,039	10,558	3,836
M56x5.5	85	2030	781.59	4,771	4,377	5,471	6,128	6,565	6,872	8,754	13,131	4,771
M60x5.5	90	2362	909.42	5,948	5,456	6,821	7,639	8,185	8,567	10,913	16,369	5,948
M64x6	95	2676	1,030.29	7,187	6,594	8,242	9,231	9,891	10,352	13,188	19,782	7,187
M68x6	100	3055	1,176.33	8,719	7,999	9,999	11,199	11,999	12,559	15,998	23,997	8,719
M72x6	105	3460	1,332.05	10,454	9,591	11,988	13,427	14,386	15,058	19,182	28,772	10,454
M76x6	110	3889	1,497.45	12,405	11,381	14,226	15,933	17,071	17,868	22,761	34,142	12,405
M80x6	115	4344	1,672.52	14,584	13,380	16,725	18,732	20,070	21,007	26,760	40,140	14,584
M90x6	130	5591	2,152.53	21,116	19,373	24,216	27,122	29,059	30,415	38,745	58,118	21,116
M100x6	145	6995	2,693.01	29,354	26,930	33,663	37,702	40,395	42,280	53,860	80,790	29,354
M110x6	155	8556	3,293.97	39,495	36,234	45,292	50,727	54,351	56,887	72,467	108,701	39,495
M125x6	180	11192	4,308.80	58,707	53,860	67,325	75,404	80,790	84,560	107,720	161,580	58,707

TORQUE GUIDE FOR MATERIAL STANDARD 1.7709						REQUIRED TORQUE (N-m)						
MINIMUM YIELD (Mpa)			550	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	MACHINE OIL K=.200	DRY STEEL K=.300	CUSTOM (INSERT K) K=.300
M20x2.5	30	245	107.72	235	215	269	302	323	338	431	646	235
M22x2.5	32	303	133.50	320	294	367	411	441	461	587	881	320
M24x3	36	353	155.11	406	372	465	521	558	584	745	1,117	406
M27x3	41	459	202.15	595	546	682	764	819	857	1,092	1,637	595
M30x3.5	46	561	246.67	807	740	925	1,036	1,110	1,162	1,480	2,220	807
M33x3.5	50	694	305.18	1,098	1,007	1,259	1,410	1,511	1,581	2,014	3,021	1,098
M36x4	55	817	359.38	1,410	1,294	1,617	1,811	1,941	2,031	2,588	3,881	1,410
M39x4	60	976	429.35	1,825	1,674	2,093	2,344	2,512	2,629	3,349	5,023	1,825
M42x4.5	65	1121	493.22	2,258	2,072	2,589	2,900	3,107	3,252	4,143	6,215	2,258
M45x4.5	70	1306	574.67	2,819	2,586	3,233	3,620	3,879	4,060	5,172	7,758	2,819
M48x5	75	1473	648.22	3,391	3,111	3,889	4,356	4,667	4,885	6,223	9,334	3,391
M52x5	80	1758	773.48	4,384	4,022	5,028	5,631	6,033	6,315	8,044	12,066	4,384
M56x5.5	85	2030	893.25	5,452	5,002	6,253	7,003	7,503	7,853	10,004	15,007	5,452
M60x5.5	90	2362	1,039.33	6,797	6,236	7,795	8,730	9,354	9,791	12,472	18,708	6,797
M64x6	95	2676	1,177.48	8,214	7,536	9,420	10,550	11,304	11,831	15,072	22,608	8,214
M68x6	100	3055	1,344.38	9,965	9,142	11,427	12,799	13,713	14,353	18,284	27,425	9,965
M72x6	105	3460	1,522.35	11,947	10,961	13,701	15,345	16,441	17,209	21,922	32,883	11,947
M76x6	110	3889	1,711.37	14,177	13,006	16,258	18,209	19,510	20,420	26,013	39,019	14,177
M80x6	115	4344	1,911.45	16,668	15,292	19,114	21,408	22,937	24,008	30,583	45,875	16,668
M90x6	130	5591	2,460.03	24,133	22,140	27,675	30,996	33,210	34,760	44,281	66,421	24,133
M100x6	145	6995	3,077.73	33,547	30,777	38,472	43,088	46,166	48,320	61,555	92,332	33,547
M110x6	155	8556	3,764.54	45,137	41,410	51,762	57,974	62,115	65,014	82,820	124,230	45,137
M125x6	180	11192	4,924.35	67,094	61,554	76,943	86,176	92,331	96,640	123,109	184,663	67,094

TORQUE GUIDE FOR MATERIAL STANDARD 1.7709						REQUIRED TORQUE (N-m)						
MINIMUM YIELD (Mpa)			550									
BOLT LOAD BASED ON			90			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	MACHINE OIL K=.200	DRY STEEL K=.300	CUSTOM (INSERT K) K=.300
												0.109
M20x2.5	30	245	121.18	264	242	303	339	364	381	485	727	264
M22x2.5	32	303	150.19	360	330	413	463	496	519	661	991	360
M24x3	36	353	174.50	456	419	523	586	628	658	838	1,256	456
M27x3	41	459	227.42	669	614	768	860	921	964	1,228	1,842	669
M30x3.5	46	561	277.51	907	833	1,041	1,166	1,249	1,307	1,665	2,498	907
M33x3.5	50	694	343.33	1,235	1,133	1,416	1,586	1,699	1,779	2,266	3,399	1,235
M36x4	55	817	404.30	1,586	1,455	1,819	2,038	2,183	2,285	2,911	4,366	1,586
M39x4	60	976	483.02	2,053	1,884	2,355	2,637	2,826	2,958	3,768	5,651	2,053
M42x4.5	65	1121	554.88	2,540	2,330	2,913	3,263	3,496	3,659	4,661	6,991	2,540
M45x4.5	70	1306	646.50	3,171	2,909	3,637	4,073	4,364	4,568	5,819	8,728	3,171
M48x5	75	1473	729.24	3,815	3,500	4,375	4,901	5,251	5,496	7,001	10,501	3,815
M52x5	80	1758	870.17	4,932	4,525	5,656	6,335	6,787	7,104	9,050	13,575	4,932
M56x5.5	85	2030	1,004.90	6,134	5,627	7,034	7,878	8,441	8,835	11,255	16,882	6,134
M60x5.5	90	2362	1,169.25	7,647	7,015	8,769	9,822	10,523	11,014	14,031	21,046	7,647
M64x6	95	2676	1,324.66	9,241	8,478	10,597	11,869	12,717	13,310	16,956	25,434	9,241
M68x6	100	3055	1,512.43	11,210	10,285	12,856	14,398	15,427	16,147	20,569	30,854	11,210
M72x6	105	3460	1,712.64	13,441	12,331	15,414	17,263	18,497	19,360	24,662	36,993	13,441
M76x6	110	3889	1,925.29	15,949	14,632	18,290	20,485	21,948	22,973	29,264	43,897	15,949
M80x6	115	4344	2,150.38	18,751	17,203	21,504	24,084	25,805	27,009	34,406	51,609	18,751
M90x6	130	5591	2,767.53	27,149	24,908	31,135	34,871	37,362	39,105	49,816	74,723	27,149
M100x6	145	6995	3,462.44	37,741	34,624	43,281	48,474	51,937	54,360	69,249	103,873	37,741
M110x6	155	8556	4,235.10	50,779	46,586	58,233	65,221	69,879	73,140	93,172	139,758	50,779
M125x6	180	11192	5,539.89	75,481	69,249	86,561	96,948	103,873	108,720	138,497	207,746	75,481

TORQUE GUIDE FOR MATERIAL STANDARD 1.7709						REQUIRED TORQUE (N-m)						
MINIMUM YIELD (Mpa)			550									
BOLT LOAD BASED ON			99			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	MACHINE OIL K=.200	DRY STEEL K=.300	CUSTOM (INSERT K) K=.300
												0.109
M20x2.5	30	245	133.30	291	267	333	373	400	419	533	800	291
M22x2.5	32	303	165.21	396	363	454	509	545	571	727	1,090	396
M24x3	36	353	191.95	502	461	576	645	691	723	921	1,382	502
M27x3	41	459	250.16	736	675	844	946	1,013	1,060	1,351	2,026	736
M30x3.5	46	561	305.26	998	916	1,145	1,282	1,374	1,438	1,832	2,747	998
M33x3.5	50	694	377.66	1,358	1,246	1,558	1,745	1,869	1,957	2,493	3,739	1,358
M36x4	55	817	444.73	1,745	1,601	2,001	2,241	2,402	2,514	3,202	4,803	1,745
M39x4	60	976	531.32	2,259	2,072	2,590	2,901	3,108	3,253	4,144	6,216	2,259
M42x4.5	65	1121	610.37	2,794	2,564	3,204	3,589	3,845	4,025	5,127	7,691	2,794
M45x4.5	70	1306	711.15	3,488	3,200	4,000	4,480	4,800	5,024	6,400	9,601	3,488
M48x5	75	1473	802.17	4,197	3,850	4,813	5,391	5,776	6,045	7,701	11,551	4,197
M52x5	80	1758	957.18	5,425	4,977	6,222	6,968	7,466	7,814	9,955	14,932	5,425
M56x5.5	85	2030	1,105.39	6,747	6,190	7,738	8,666	9,285	9,719	12,380	18,571	6,747
M60x5.5	90	2362	1,286.17	8,412	7,717	9,646	10,804	11,576	12,116	15,434	23,151	8,412
M64x6	95	2676	1,457.13	10,165	9,326	11,657	13,056	13,988	14,641	18,651	27,977	10,165
M68x6	100	3055	1,663.67	12,331	11,313	14,141	15,838	16,969	17,761	22,626	33,939	12,331
M72x6	105	3460	1,883.90	14,785	13,564	16,955	18,990	20,346	21,296	27,128	40,692	14,785
M76x6	110	3889	2,117.82	17,544	16,095	20,119	22,534	24,143	25,270	32,191	48,286	17,544
M80x6	115	4344	2,365.42	20,626	18,923	23,654	26,493	28,385	29,710	37,847	56,770	20,626
M90x6	130	5591	3,044.29	29,864	27,399	34,248	38,358	41,098	43,016	54,797	82,196	29,864
M100x6	145	6995	3,808.69	41,515	38,087	47,609	53,322	57,130	59,796	76,174	114,261	41,515
M110x6	155	8556	4,658.61	55,857	51,245	64,056	71,743	76,867	80,454	102,490	153,734	55,857
M125x6	180	11192	6,093.88	83,029	76,173	95,217	106,643	114,260	119,592	152,347	228,520	83,029