

BOLT LOAD (METRIC) SOCKET HEAD CAP SCREWS (MATERIAL 1.4986)

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 1.4986						REQUIRED TORQUE (N-m)						
MINIMUM YIELD (Mpa)			500									
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)
M20x2.5	30	245	48.96	107	98	122	137	147	154	196	294	107
M22x2.5	32	303	60.68	146	134	167	187	200	210	267	401	146
M24x3	36	353	70.50	184	169	212	237	254	266	338	508	184
M27x3	41	459	91.89	270	248	310	347	372	390	496	744	270
M30x3.5	46	561	112.12	367	336	420	471	505	528	673	1,009	367
M33x3.5	50	694	138.72	499	458	572	641	687	719	916	1,373	499
M36x4	55	817	163.35	641	588	735	823	882	923	1,176	1,764	641
M39x4	60	976	195.16	830	761	951	1,066	1,142	1,195	1,522	2,283	830
M42x4.5	65	1121	224.19	1,026	942	1,177	1,318	1,412	1,478	1,883	2,825	1,026
M45x4.5	70	1306	261.21	1,281	1,175	1,469	1,646	1,763	1,845	2,351	3,526	1,281
M48x5	75	1473	294.64	1,542	1,414	1,768	1,980	2,121	2,220	2,829	4,243	1,542
M52x5	80	1758	351.58	1,993	1,828	2,285	2,560	2,742	2,870	3,656	5,485	1,993
M56x5.5	85	2030	406.02	2,478	2,274	2,842	3,183	3,411	3,570	4,547	6,821	2,478
M60x5.5	90	2362	472.42	3,090	2,835	3,543	3,968	4,252	4,450	5,669	8,504	3,090
M64x6	95	2676	535.22	3,734	3,425	4,282	4,796	5,138	5,378	6,851	10,276	3,734
M68x6	100	3055	611.08	4,529	4,155	5,194	5,818	6,233	6,524	8,311	12,466	4,529
M72x6	105	3460	691.98	5,431	4,982	6,228	6,975	7,473	7,822	9,964	14,947	5,431
M76x6	110	3889	777.89	6,444	5,912	7,390	8,277	8,868	9,282	11,824	17,736	6,444
M80x6	115	4344	868.84	7,576	6,951	8,688	9,731	10,426	10,913	13,901	20,852	7,576
M90x6	130	5591	1,118.20	10,969	10,064	12,580	14,089	15,096	15,800	20,128	30,191	10,969
M100x6	145	6995	1,398.97	15,249	13,990	17,487	19,586	20,984	21,964	27,979	41,969	15,249
M110x6	155	8556	1,711.15	20,517	18,823	23,528	26,352	28,234	29,552	37,645	56,468	20,517
M125x6	180	11192	2,238.34	30,497	27,979	34,974	39,171	41,969	43,927	55,958	83,938	30,497

TORQUE GUIDE FOR MATERIAL STANDARD 1.4986						REQUIRED TORQUE (N-m)						
MINIMUM YIELD (Mpa)			500									
BOLT LOAD BASED ON			50			PERCENT YIELD						
BOLT SIZE DIA. x P	HEX NUT ACROSS FLAT (mm)	STRESS AREA (mm) ²	BOLT LOAD (kN)	LoadDISC 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)
												0.109
M20x2.5	30	245	61.20	133	122	153	171	184	192	245	367	133
M22x2.5	32	303	75.85	182	167	209	234	250	262	334	501	182
M24x3	36	353	88.13	231	212	264	296	317	332	423	635	231
M27x3	41	459	114.86	338	310	388	434	465	487	620	930	338
M30x3.5	46	561	140.15	458	420	526	589	631	660	841	1,261	458
M33x3.5	50	694	173.40	624	572	715	801	858	898	1,144	1,717	624
M36x4	55	817	204.19	801	735	919	1,029	1,103	1,154	1,470	2,205	801
M39x4	60	976	243.95	1,037	951	1,189	1,332	1,427	1,494	1,903	2,854	1,037
M42x4.5	65	1121	280.24	1,283	1,177	1,471	1,648	1,766	1,848	2,354	3,531	1,283
M45x4.5	70	1306	326.52	1,602	1,469	1,837	2,057	2,204	2,307	2,939	4,408	1,602
M48x5	75	1473	368.30	1,927	1,768	2,210	2,475	2,652	2,776	3,536	5,304	1,927
M52x5	80	1758	439.48	2,491	2,285	2,857	3,199	3,428	3,588	4,571	6,856	2,491
M56x5.5	85	2030	507.53	3,098	2,842	3,553	3,979	4,263	4,462	5,684	8,526	3,098
M60x5.5	90	2362	590.53	3,862	3,543	4,429	4,960	5,315	5,563	7,086	10,630	3,862
M64x6	95	2676	669.02	4,667	4,282	5,352	5,994	6,423	6,722	8,563	12,845	4,667
M68x6	100	3055	763.85	5,662	5,194	6,493	7,272	7,791	8,155	10,388	15,583	5,662
M72x6	105	3460	864.97	6,788	6,228	7,785	8,719	9,342	9,778	12,456	18,683	6,788
M76x6	110	3889	972.37	8,055	7,390	9,237	10,346	11,085	11,602	14,780	22,170	8,055
M80x6	115	4344	1,086.05	9,470	8,688	10,861	12,164	13,033	13,641	17,377	26,065	9,470
M90x6	130	5591	1,397.74	13,712	12,580	15,725	17,612	18,870	19,750	25,159	37,739	13,712
M100x6	145	6995	1,748.71	19,061	17,487	21,859	24,482	26,231	27,455	34,974	52,461	19,061
M110x6	155	8556	2,138.94	25,646	23,528	29,410	32,940	35,293	36,940	47,057	70,585	25,646
M125x6	180	11192	2,797.92	38,122	34,974	43,718	48,964	52,461	54,909	69,948	104,922	38,122

TORQUE GUIDE FOR MATERIAL STANDARD 1.4986						REQUIRED TORQUE (N-m)						
MINIMUM YIELD (Mpa)			500									
BOLT LOAD BASED ON			60			PERCENT YIELD						
BOLT SIZE DIA. x P	HEX NUT ACROSS FLAT (mm)	STRESS AREA (mm) ²	BOLT LOAD (kN)	LoadDISC 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)
												0.109
M20x2.5	30	245	73.44	160	147	184	206	220	231	294	441	160
M22x2.5	32	303	91.02	218	200	250	280	300	314	401	601	218
M24x3	36	353	105.76	277	254	317	355	381	398	508	761	277
M27x3	41	459	137.83	406	372	465	521	558	584	744	1,116	406
M30x3.5	46	561	168.19	550	505	631	706	757	792	1,009	1,514	550
M33x3.5	50	694	208.08	748	687	858	961	1,030	1,078	1,373	2,060	748
M36x4	55	817	245.03	961	882	1,103	1,235	1,323	1,385	1,764	2,646	961
M39x4	60	976	292.74	1,244	1,142	1,427	1,598	1,713	1,792	2,283	3,425	1,244
M42x4.5	65	1121	336.29	1,540	1,412	1,766	1,977	2,119	2,217	2,825	4,237	1,540
M45x4.5	70	1306	391.82	1,922	1,763	2,204	2,468	2,645	2,768	3,526	5,290	1,922
M48x5	75	1473	441.97	2,312	2,121	2,652	2,970	3,182	3,331	4,243	6,364	2,312
M52x5	80	1758	527.37	2,989	2,742	3,428	3,839	4,114	4,305	5,485	8,227	2,989
M56x5.5	85	2030	609.03	3,718	3,411	4,263	4,775	5,116	5,355	6,821	10,232	3,718
M60x5.5	90	2362	708.64	4,634	4,252	5,315	5,953	6,378	6,675	8,504	12,755	4,634
M64x6	95	2676	802.83	5,601	5,138	6,423	7,193	7,707	8,067	10,276	15,414	5,601
M68x6	100	3055	916.62	6,794	6,233	7,791	8,726	9,350	9,786	12,466	18,699	6,794
M72x6	105	3460	1,037.96	8,146	7,473	9,342	10,463	11,210	11,733	14,947	22,420	8,146
M76x6	110	3889	1,166.84	9,666	8,868	11,085	12,415	13,302	13,923	17,736	26,604	9,666
M80x6	115	4344	1,303.26	11,364	10,426	13,033	14,597	15,639	16,369	20,852	31,278	11,364
M90x6	130	5591	1,677.29	16,454	15,096	18,870	21,134	22,643	23,700	30,191	45,287	16,454
M100x6	145	6995	2,098.45	22,873	20,984	26,231	29,378	31,477	32,946	41,969	62,953	22,873
M110x6	155	8556	2,566.73	30,775	28,234	35,293	39,528	42,351	44,327	56,468	84,702	30,775
M125x6	180	11192	3,357.51	45,746	41,969	52,461	58,756	62,953	65,891	83,938	125,907	45,746

TORQUE GUIDE FOR MATERIAL STANDARD 1.4986						REQUIRED TORQUE (N-m)						
MINIMUM YIELD (Mpa)			500									
BOLT LOAD BASED ON			70			PERCENT YIELD						
BOLT SIZE DIA. x P	HEX NUT ACROSS FLAT (mm)	STRESS AREA (mm) ²	BOLT LOAD (kN)	Load DISC 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)
												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 1.4986						REQUIRED TORQUE (N-m)						
MINIMUM YIELD (Mpa)			500									
BOLT LOAD BASED ON			80			PERCENT YIELD						
BOLT SIZE DIA. x P	HEX NUT ACROSS FLAT (mm)	STRESS AREA (mm) ²	BOLT LOAD (kN)	Load DISC 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)
												0.109
M20x2.5	30	245	97.92	213	196	245	274	294	307	392	588	213
M22x2.5	32	303	121.37	291	267	334	374	401	419	534	801	291
M24x3	36	353	141.01	369	338	423	474	508	531	677	1,015	369
M27x3	41	459	183.77	541	496	620	695	744	779	992	1,489	541
M30x3.5	46	561	224.25	733	673	841	942	1,009	1,056	1,345	2,018	733
M33x3.5	50	694	277.43	998	916	1,144	1,282	1,373	1,437	1,831	2,747	998
M36x4	55	817	326.71	1,282	1,176	1,470	1,647	1,764	1,847	2,352	3,528	1,282
M39x4	60	976	390.32	1,659	1,522	1,903	2,131	2,283	2,390	3,044	4,567	1,659
M42x4.5	65	1121	448.39	2,053	1,883	2,354	2,637	2,825	2,957	3,766	5,650	2,053
M45x4.5	70	1306	522.43	2,562	2,351	2,939	3,291	3,526	3,691	4,702	7,053	2,562
M48x5	75	1473	589.29	3,083	2,829	3,536	3,960	4,243	4,441	5,657	8,486	3,083
M52x5	80	1758	703.16	3,986	3,656	4,571	5,119	5,485	5,741	7,313	10,969	3,986
M56x5.5	85	2030	812.04	4,957	4,547	5,684	6,366	6,821	7,139	9,095	13,642	4,957
M60x5.5	90	2362	944.85	6,179	5,669	7,086	7,937	8,504	8,900	11,338	17,007	6,179
M64x6	95	2676	1,070.43	7,467	6,851	8,563	9,591	10,276	10,756	13,702	20,552	7,467
M68x6	100	3055	1,222.17	9,059	8,311	10,388	11,635	12,466	13,048	16,621	24,932	9,059
M72x6	105	3460	1,383.95	10,861	9,964	12,456	13,950	14,947	15,644	19,929	29,893	10,861
M76x6	110	3889	1,555.79	12,888	11,824	14,780	16,554	17,736	18,564	23,648	35,472	12,888
M80x6	115	4344	1,737.68	15,153	13,901	17,377	19,462	20,852	21,825	27,803	41,704	15,153
M90x6	130	5591	2,236.39	21,939	20,128	25,159	28,179	30,191	31,600	40,255	60,383	21,939
M100x6	145	6995	2,797.93	30,497	27,979	34,974	39,171	41,969	43,928	55,959	83,938	30,497
M110x6	155	8556	3,422.31	41,033	37,645	47,057	52,704	56,468	59,103	75,291	112,936	41,033
M125x6	180	11192	4,476.68	60,995	55,958	69,948	78,342	83,938	87,855	111,917	167,875	60,995

TORQUE GUIDE FOR MATERIAL STANDARD 1.4986						REQUIRED TORQUE (N-m)						
MINIMUM YIELD (Mpa)			500									
BOLT LOAD BASED ON			90			PERCENT YIELD						
BOLT SIZE DIA. x P	HEX NUT ACROSS FLAT (mm)	STRESS AREA (mm) ²	BOLT LOAD (kN)	LoadDISC 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)
												0.109
M20x2.5	30	245	110.16	240	220	275	308	330	346	441	661	240
M22x2.5	32	303	136.54	327	300	375	421	451	472	601	901	327
M24x3	36	353	158.64	415	381	476	533	571	598	761	1,142	415
M27x3	41	459	206.74	608	558	698	781	837	876	1,116	1,675	608
M30x3.5	46	561	252.28	825	757	946	1,060	1,135	1,188	1,514	2,270	825
M33x3.5	50	694	312.11	1,123	1,030	1,287	1,442	1,545	1,617	2,060	3,090	1,123
M36x4	55	817	367.54	1,442	1,323	1,654	1,852	1,985	2,077	2,646	3,969	1,442
M39x4	60	976	439.11	1,867	1,713	2,141	2,398	2,569	2,689	3,425	5,138	1,867
M42x4.5	65	1121	504.43	2,309	2,119	2,648	2,966	3,178	3,326	4,237	6,356	2,309
M45x4.5	70	1306	587.73	2,883	2,645	3,306	3,703	3,967	4,152	5,290	7,934	2,883
M48x5	75	1473	662.95	3,469	3,182	3,978	4,455	4,773	4,996	6,364	9,546	3,469
M52x5	80	1758	791.06	4,484	4,114	5,142	5,759	6,170	6,458	8,227	12,341	4,484
M56x5.5	85	2030	913.55	5,576	5,116	6,395	7,162	7,674	8,032	10,232	15,348	5,576
M60x5.5	90	2362	1,062.95	6,952	6,378	7,972	8,929	9,567	10,013	12,755	19,133	6,952
M64x6	95	2676	1,204.24	8,401	7,707	9,634	10,790	11,561	12,100	15,414	23,121	8,401
M68x6	100	3055	1,374.94	10,191	9,350	11,687	13,089	14,024	14,679	18,699	28,049	10,191
M72x6	105	3460	1,556.94	12,219	11,210	14,013	15,694	16,815	17,600	22,420	33,630	12,219
M76x6	110	3889	1,750.26	14,499	13,302	16,627	18,623	19,953	20,884	26,604	39,906	14,499
M80x6	115	4344	1,954.89	17,047	15,639	19,549	21,895	23,459	24,553	31,278	46,917	17,047
M90x6	130	5591	2,515.94	24,681	22,643	28,304	31,701	33,965	35,550	45,287	67,930	24,681
M100x6	145	6995	3,147.67	34,310	31,477	39,346	44,067	47,215	49,418	62,953	94,430	34,310
M110x6	155	8556	3,850.09	46,163	42,351	52,939	59,291	63,527	66,491	84,702	127,053	46,163
M125x6	180	11192	5,036.26	68,619	62,953	78,692	88,135	94,430	98,837	125,907	188,860	68,619

TORQUE GUIDE FOR MATERIAL STANDARD 1.4986						REQUIRED TORQUE (N-m)						
MINIMUM YIELD (Mpa)			500									
BOLT LOAD BASED ON			99			PERCENT YIELD						
BOLT SIZE DIA. x P	HEX NUT ACROSS FLAT (mm)	STRESS AREA (mm) ²	BOLT LOAD (kN)	LoadDISC 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)
												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