MIL-B-87114/1B (AS)
23 November 1981
SUPERSEDING
MIL-B-87114/1A(AS)
30 June 1981

MILITARY SECIFICATION SHEET

BOLTS, 100° HEAD, RIBBED-TORQ-SET RECESS, CLOSE TOLERANCE, ALLOY STEEL, LONG THREAD, 95 KSI FSU

This specification sheet is approved for use by the Naval Air Systems Command, Department of the Navy, and is available for use by all Departments and Agencies of the Department of Defense.

The complete requirement for procuring the bolts described herein shall consist of this document and the latest issue of specification MIL-B-87114.

APPLICATION CRITERIA: These bolts, together with MS14179 nut are for use in bolted joints and access panels that require frequent opening.

COMPANION PARTS: MS14179 Nut, Plate, Self-Locking, Floating, Two Lug, Reduced Rivet Spacing, Steel, Vespel Insert, 500 Cycles Reuse, Replaceable Nut, 160 KSI Ftu, 450°F.

BOLTS RECESS: Bolts recess shall be in accordance with MS14191.

DRIVER BIT: The recess driver bit shall be accordance with MIL-B-9946.

GENERAL REQUIREMENTS:

Material Alloy Steel: AISI 4340 per MIL-S-5000 or AISI 8740 per MIL-S-6049 or AMS 6324.

Heat Treatment: Rockwell "C" 36 to 40.

Plating: Cadmium plate in accordance with QQ-P-416, Type II, Class 2.

Surface texture in accordance with ANSI B46.1 "D" diameter, conical surface of head, thread flanks, and thread root shall not exceed 32 microinches, other surfaces shall not exceed 125 microinches.

Dimensions:

Dimensions in inches.

Dimensions to be met after plating.

Tolerances: Unless otherwise specified, dimensions ± Ø.010 and angles ± 2°.

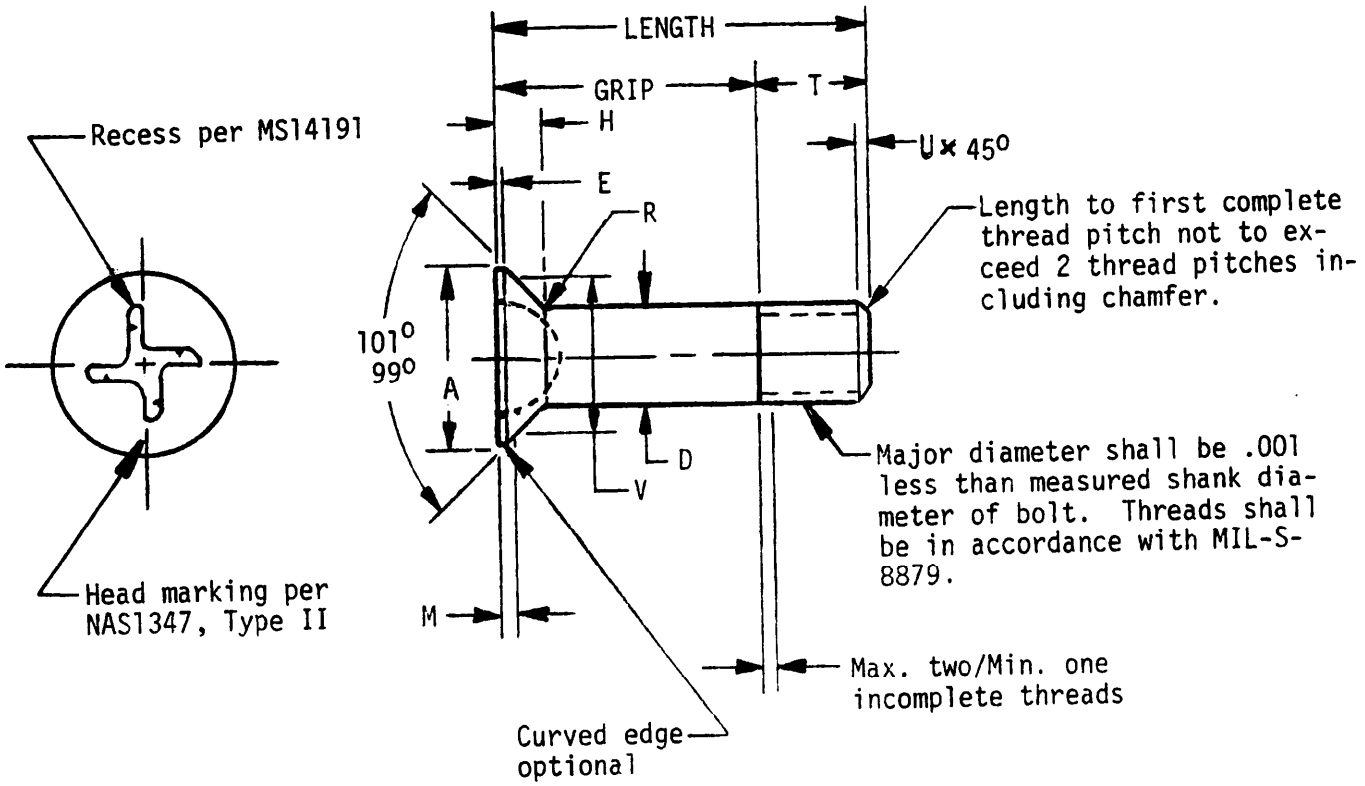


Figure 1 Bolt 100° Flush Head

Table 1 Bolt Dimensions

Dia. Dash No.	Normal Size	Thread UNJF3A MIL-S-8879	A Dia Max Ref (a)	D Dia. Max	D Dia. Min	E Max	H Max Ref (a)
3	No. 10	.1900-32	.383	.1895	.1885	.015	.084
4	1/4	.2500-28	.512	.2495	.2485	.018	.111
5	5/16	.3125-24	.638	.3120	.3110	.021	.138

Table I (cont'd)

Dia. Dash No.	R Rad Max	R Rad Min	T Min Ref (a,b)	U	Y (c)	Z (d)	Recess & Driver Size (e)
3	.030	.010	.430	.045	.0045	.0030	10
4	.030	.010	.539	.045	.0045	.0030	1/4
5	.040	.010	.639	.052	.0045	.0030	5/16

Table II Mechanical Properties

Dia. Dash No.	Double Shear Min(lbs)(f)	Tension Min (lbs) (g)	M Gage Protrusion Max	M Gage Protrusion Min	V Gage Dia. Max	V Gage Dia. Min	Fatigue Loading (h) High Tension Load (lbs) +2%	Fatigue Loading (h) Low Tension Load (lbs) +2%
3	5,400	3,180	.0300	.0275	.3147	.3135	1,190	119
4	9,330	5,820	.0360	.0330	.4245	.4243	2,180	218
5	14,600	9,200	.0410	.0375	.5389	.5387	3,470	347

Table I, II, notes:

(a) Reference dimensions are for design purposes only and are not for inspection or manufacturing.

(b) T min = H max (MS14179) +5 (Thread pitch) -Ø.096 for diameter dash no. 3 and 4, and -Ø.109 for diameter dash no. 5.

(c) Concentricity: Conical surface of head to "D" diameter within .003 full indicator measurement (FIM) "D" diameter to thread pitch diameter within "Y" FIM. Recess to shank shall be concentric to each other within Ø.010 FIM.

(d) Shank Straightness: Within "Z" FIM per inch of length.

(e) Bolts recess shall be in accordance with MS 14191.

(f) Based on MIL-HDBK-5 shear stress area.

(g) Based on head strength.

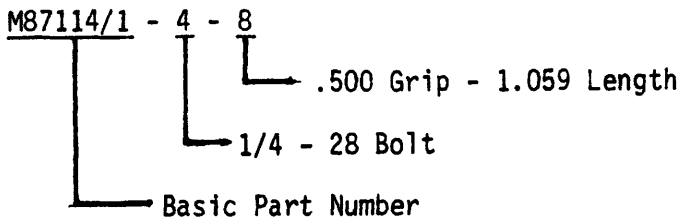
(h) High fatigue load is 37.5% of ultimate tensile strength listed in Table II Low load is 10% of high load.

Table III Grip Lengths

Grip Dash No.	Grip ±.010	Diameter Dash Numbers		
		3	4	5
		Length ±.015		
02	0.125	0.580 (a)	0.684 (a)	0.847 (a)
03	0.188	0.643	0.747	0.909
04	0.250	0.705	0.804	0.971
05	0.312	0.767	0.871	1.034
06	0.375	0.830	0.934	1.097
07	0.438	0.893	0.977	1.159
08	0.500	0.955	1.059	1.221
09	0.562	1.017	1.121	1.284
10	0.625	1.080	1.184	1.347
11	0.688	1.143	1.247	1.409
12	0.750	1.205	1.309	1.471
13	0.812	1.267	1.371	1.534
14	0.875	1.330	1.434	1.597
15	0.938	1.393	1.497	1.659
16	1.000	1.455	1.559	1.721
17	1.062	1.517	1.621	1.784
18	1.125	1.580	1.684	1.847
19	1.188	1.643	1.747	1.909
20	1.250	1.705	1.809	1.971
21	1.312	1.767	1.871	2.034
22	1.375	1.830	1.934	2.097
23	1.438	1.893	1.997	2.159
24	1.500	1.955	2.059	2.221
25	1.562	2.017	2.121	2.284
26	1.625	2.080	2.184	2.347
27	1.688	2.143	2.247	2.409
28	1.750	2.205	2.309	2.471
29	1.812	2.267	2.371	2.534
30	1.875	2.330	2.434	2.597
31	1.938	2.393	2.497	2.659
32	2.000	2.455	2.559	2.784
34	2.125	2.580	2.684	2.909
36	2.250	2.705	2.809	3.034
38	2.375	2.830	2.934	3.159
40	2.500	2.955	3.059	3.284
42	2.625	3.080	3.189	3.409
44	2.750	3.205	3.309	3.534
46	2.875	3.330	3.434	3.659
48	3.000	3.455	3.559	

Note (a) - Short bolts listed above heavy line shall be threaded to within two thread pitches of head to shank intersection, but thread shall not enter the fillet radius. Table II tensile requirements do not apply to these short bolts.

PART NUMBER EXAMPLE AND CODE:



ADMINISTRATIVE AND CONTRACTUAL PROVISIONS:

This document takes precedence over procurement documents specified herein.

Reference documents shall be of the issue in effect on date of invitation for bid.

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Project No. 5306-N130

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DOCUMENT IDENTIFIER *(Number)* AND TITLE
MIL-B-87114/1(AS) REV. B — Bolts, 100° Head, Ribbed-Torq-Set, Close Tolerance Alloy Steel, Long Thread, 95 KSI FSU

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