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MIL-B-87114/3B (AS)
23 November 1981
SUPERSEDING
MIL-B-87114/3A(AS)
30 June 1981

MILITARY SECIFICATION SHEET

BOLTS, PAN 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 ± 0.010 and angles ± 2°.

FSC 5306

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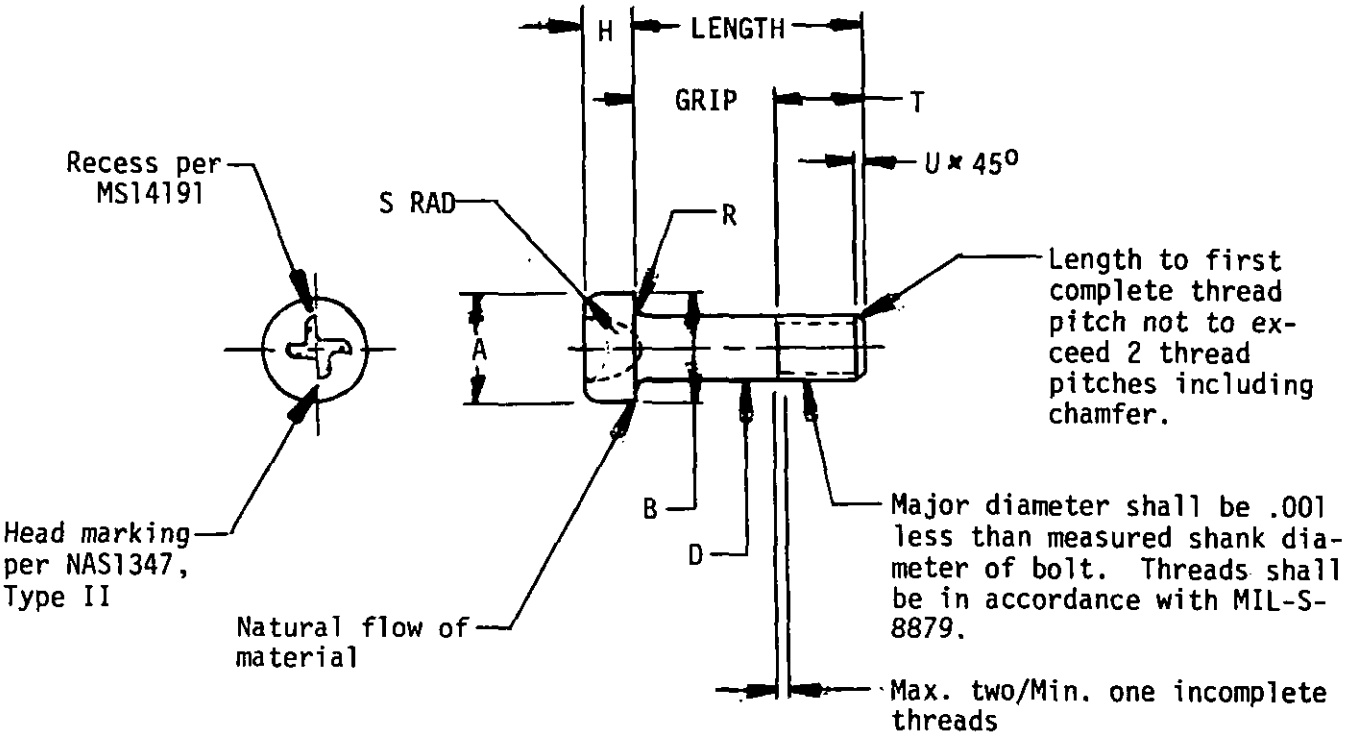

Figure 1 Pan Head Bolt

Table I Bolt Dimensions

Dia Dash No.	Normal Size	Thread UNFJ3A MIL-S-8879	A Dia (d) Max	A Dia (d) Min	B Dia Min	D (d) Max	D (d) Min	H Max	H Min
3	No. 10	.1900-32	.374	.360	.296	.1895	.1885	.125	.115
4	1/4	.2500-28	.492	.473	.357	.2495	.2485	.150	.140
5	5/16	.3125-24	.615	.594	.413	.3120	.3110	.188	.176

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Table I (cont'd)

Dia Dash No.	R Max	R Min	S Rad Max	T Min (a,b)	U	Recess & Driver Size (c)	Concentricity X(d)	Concentricity Y(e)	Concentricity Z(f)
3	.020	.010	.035	.430	.045	10	.005	.004	.0030
4	.020	.010	.040	.539	.045	1/4	.006	.005	.0030
5	.025	.015	.050	.639	.045	5/16	.008	.006	.0030

Table II Mechanical Properties

Dia Dash No.	Double Shear Min(lbs)(g)	Tension Min (lbs) (h)	Fatigue Loading (i) High Tension Load(lbs)±2%	Fatigue Loading (i) Low Tension Load(lbs) ±2%
3	5,400	3,180	1,190	119
4	9,330	5,820	2,180	218
5	14,600	9,200	3,470	347

Table I, II, [illegible] 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.006 for diameter dash no. 3 and 4, and - Ø.109 for diameter dash no. 5.

(c) Bolts recess shall be in accordance with MS14191.

(d) Diameter "A" and "D" shall be concentric to each other within values specified "X" FIM (full indicator measurement).

(e) Diameter "D" and thread pitch diameter shall be concentric to each other within values specified for "Y" FIM. Recess to shank shall be concentric within Ø.010 FIM.

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

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

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(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		
01	0.062	0.517	0.621	0.721
02	0.125	0.580	0.684	0.784
03	0.188	0.643	0.747	0.847
04	0.250	0.705	0.809	0.909
05	0.312	0.767	0.871	0.971
06	0.375	0.830	0.934	1.034
07	0.438	0.893	0.977	1.097
08	0.500	0.955	1.059	1.159
09	0.562	1.017	1.121	1.221
10	0.625	1.080	1.184	1.284
11	0.688	1.143	1.247	1.347
12	0.750	1.205	1.309	1.409
13	0.812	1.267	1.371	1.471
14	0.875	1.330	1.434	1.534
15	0.938	1.393	1.497	1.597
16	1.000	1.455	1.559	1.659
17	1.062	1.517	1.621	1.721
18	1.125	1.580	1.684	1.784
19	1.188	1.643	1.747	1.847
20	1.250	1.705	1.809	1.909
21	1.312	1.767	1.871	1.971
22	1.375	1.830	1.934	2.034
23	1.438	1.893	1.997	2.097
24	1.500	1.955	2.059	2.159
25	1.562	2.017	2.121	2.221
26	1.625	2.080	2.184	2.284
27	1.688	2.143	2.247	2.347
28	1.750	2.205	2.309	2.409
29	1.812	2.267	2.371	2.471
30	1.875	2.330	2.434	2.534
31	1.938	2.393	2.497	2.597
32	2.000	2.455	2.559	2.659
34	2.125	2.580	2.684	2.784
36	2.250	2.705	2.809	2.909
38	2.375	2.830	2.934	3.034
40	2.500	2.955	3.059	3.159
42	2.625	3.080	3.189	3.284
44	2.750	3.205	3.309	3.409
46	2.875	3.330	3.434	3.534
48	3.000	3.455	3.559	3.659

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PART NUMBER EXAMPLE AND CODE:

M87114/3 - 4 - 8

- 8 — .500 Grip - 1.059 Length
- 4 — 1/4 - 28 Bolt
- M87114/3 — Basic Part Number

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.

CUSTODIANS:

Navy - AS

PREPARING ACTIVITY:

Navy - AS
Project No. 5306-N132

REVIEW ACTIVITY: