

D-17-19

**NOTICE OF
ADOPTION**ADOPTION NOTICE 1
24 April 1989 for
MA3304
December 1987

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Society of Automotive Engineers, Inc.
400 Commonwealth Drive
Warrendale, PA 15096-0001

Title of Document: BOLT - MACHINE - HEX HEAD - DRILLED,
PD SHANK, MJ THREAD, AMS 6322
CADMIUM PLATE, METRIC

Date of Specific Issue Adopted: December 1987

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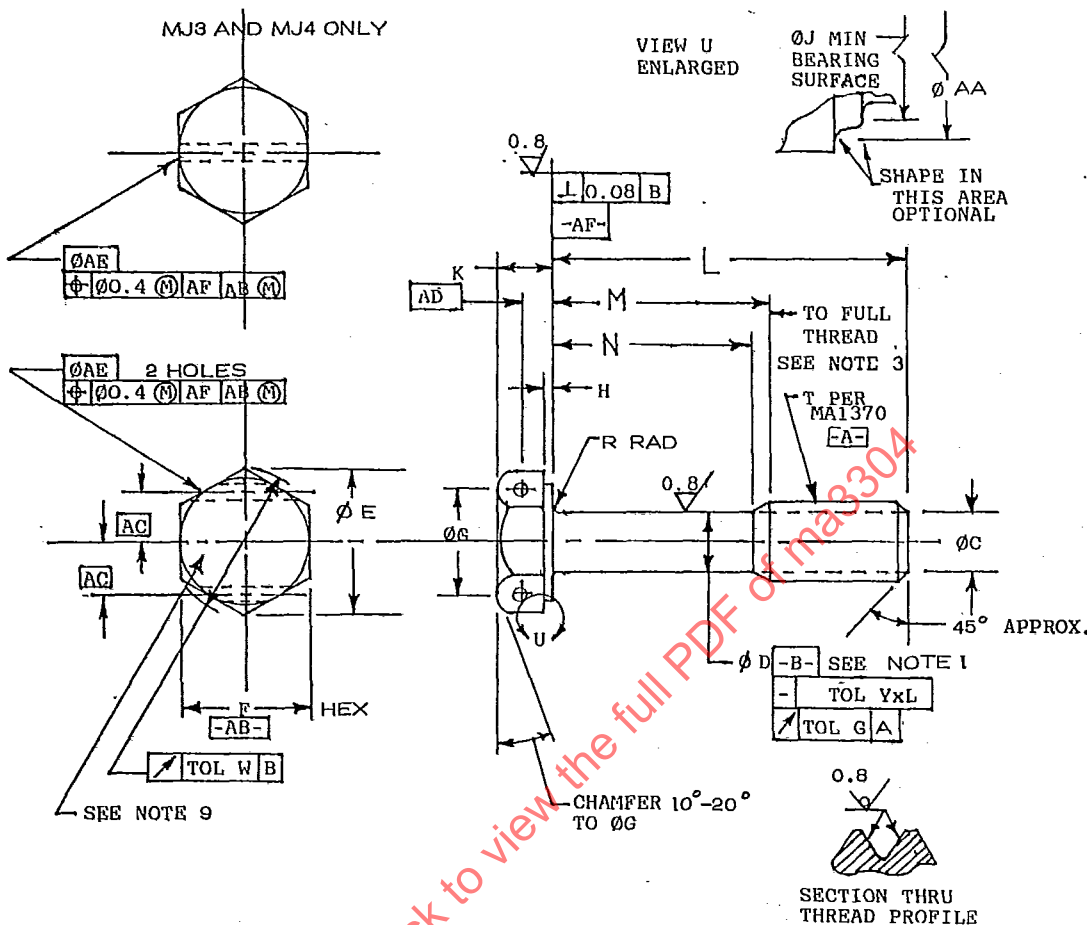
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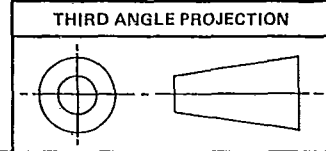
FEDERAL SUPPLY CLASS
5306

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- FOR PART NUMBERS WHERE DIMENSION N IS EQUAL TO OR LESS THAN ONE TIMES THE NOMINAL DIAMETER OF THE THREAD, THE THREAD PD SHALL REPLACE DATUM B.
- MATERIAL: ALLOY STEEL PER AMS 6322 (G87400)
- PROCUREMENT SPECIFICATION: MA3376
- HARDNESS: 26-32 HRC OR EQUIVALENT.
- FINISH: CADMIUM PLATE PER AMS 2400. DIMENSIONS ARE AFTER PLATING.
- MAGNETIC PARTICLE INSPECTION PER AMS 2640 ACCEPTANCE CRITERIA PER MA3376
- SURFACE TEXTURE: SYMBOLS PER ANSI Y14.36-1978; REQUIREMENTS PER ANSI B46.1-1985 UNLESS OTHERWISE SPECIFIED SURFACES TO BE 3.2 MICROMETERS Ra
- PART NUMBER SHALL INCLUDE THE STANDARD NUMBER AND THE DASH NUMBER TO INDICATE DIAMETER AND LENGTH. EXAMPLE OF PART NUMBER:
MA3304-030014 - BOLT, MJ3x0.5 THREAD, 14 LONG.
MA3304-200114 - BOLT, MJ20x1.5 THREAD, 114 LONG.
- MARK PART NUMBER AND MANUFACTURER'S IDENTIFICATION PER AS 478 CLASS A. FOR MJ3 AND MJ4 MARK ONLY MA3304 AND MANUFACTURERS IDENTIFICATION
- DIMENSIONING AND TOLERANCING: ANSI Y14.5M-1982 TOLERANCE GRADES PER ANSI B4.2-1978.
- ALL DIMENSIONS IN SI MILLIMETERS.
- DO NOT USE UNASSIGNED PART NUMBERS.
- BREAK EDGES 0.1 - 0.4 UNLESS OTHERWISE SPECIFIED MA, AS AND AMS ARE SAE PUBLICATIONS. ANSI IS AMERICAN NATIONAL STANDARDS INSTITUTE PUBLICATION.



PREPARED BY SAE COMMITTEE E25, GENERAL STANDARDS FOR AEROSPACE PROPULSION SYSTEMS

<p>The Engineering Society For Advancing Mobility Land Sea Air and Space</p> <p>400 Commonwealth Drive Warrendale, PA 15096</p>	<p>METRIC AEROSPACE STANDARD</p> <p>BOLT-MACHINE, HEX HEAD, DRILLED, PD SHANK, MJ THREAD, AMS 6322, CADMIUM PLATE, METRIC</p>	<p>MA 3304</p> <p>SHEET 1 OF 7</p>
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TABLE I

PART NUMBER SEE NOTE 7	NOM DIA REF	THREAD		E MIN	F	G MIN	H
		T	C				
MA3304-030XXX	3	MJ3x0.5-4h6h	1.8-2.3	3.1-3.4	7.6	6.85-7.00	0.2-0.5
MA3304-040XXX	4	MJ4x0.7-4h6h	2.6-3.1	3.6-3.9	8.7	7.85-8.00	0.2-0.5
MA3304-050XXX	5	MJ5x0.8-4h6h	3.0-4.0	2.7-3.0	9.8	8.78-9.00	0.2-0.5
MA3304-060XXX	6	MJ6x1-4h6h	3.7-4.7	3.2-3.5	12.0	10.73-11.00	0.2-0.5
MA3304-070XXX	7	MJ7x1-4h6h	4.7-5.7	3.7-4.0	13.2	11.73-12.00	0.2-0.5
MA3304-080XXX	8	MJ8x1-4h6h	5.7-6.7	4.2-4.5	15.5	13.73-14.00	0.3-0.6
MA3304-100XXX	10	MJ10x1.25-4h6h	7.4-8.4	4.7-5.0	18.9	16.73-17.00	0.3-0.6
MA3304-120XXX	12	MJ12x1.25-4h6h	9.4-10.4	5.7-6.0	21.1	18.67-19.00	0.3-0.6
MA3304-140XXX	14	MJ14x1.5-4h6h	11.1-12.1	6.7-7.0	24.5	21.67-22.00	0.3-0.6
MA3304-160XXX	16	MJ16x1.5-4h6h	13.1-14.1	7.7-8.0	26.8	23.67-24.00	0.3-0.6
MA3304-180XXX	18	MJ18x1.5-4h6h	15.1-16.1	8.7-9.0	30.2	26.67-27.00	0.3-0.6
MA3304-200XXX	20	MJ20x1.5-4h6h	17.1-18.1	9.7-10.0	33.6	29.67-30.00	0.3-0.6

PART NUMBER SEE NOTE 7	NOM DIA REF	J MIN	D	P	R	W	Y	AA MAX	AC	AD	AE H13
MA3304-040XXX	4	7.4	3.39-3.65	0.12	0.2-0.4	0.20	0.0030	8.25	1.80	1.00-1.14	
MA3304-050XXX	5	8.3	4.32-4.58	0.12	0.3-0.5	0.25	0.0030	9.25	1.35	1.00-1.14	
MA3304-060XXX	6	10.2	5.19-5.45	0.12	0.5-0.7	0.30	0.0030	11.25	1.60	1.40-1.54	
MA3304-070XXX	7	11.2	6.19-6.45	0.15	0.5-0.7	0.35	0.0030	12.25	1.85	1.40-1.54	
MA3304-080XXX	8	13.2	7.19-7.45	0.15	0.5-0.7	0.40	0.0030	14.25	2.10	1.40-1.54	
MA3304-100XXX	10	16.0	9.02-9.28	0.15	0.6-0.8	0.50	0.0025	17.25	2.35	1.60-1.74	
MA3304-120XXX	12	18.0	11.02-11.28	0.18	0.6-0.9	0.60	0.0025	19.25	2.85	1.60-1.74	
MA3304-140XXX	14	21.0	12.85-13.11	0.18	0.8-1.1	0.70	0.0025	22.25	3.35	1.60-1.74	
MA3304-160XXX	16	23.0	14.85-15.11	0.18	0.8-1.1	0.75	0.0025	24.25	3.85	1.60-1.74	
MA3304-180XXX	18	26.0	16.85-17.11	0.18	1.0-1.3	0.75	0.0025	27.25	4.35	1.60-1.74	
MA3304-200XXX	20	29.0	18.85-19.11	0.21	1.0-1.3	0.75	0.0025	30.25	4.85	1.60-1.74	

TABLE II

L LENGTH	MJ3x0.5-4h6h				MJ4x0.7-4h6h			
	DASH NO. SEE NOTE	M MAX	N MIN	APPROX MASS kg/100	DASH NO. SEE NOTE	M MAX	N MIN	APPROX MASS kg/100
3.7-4.3	030004	1.4	0.4	0.111	—	—	—	—
5.7-6.3	030006	1.4	0.4	0.119	040006	1.8	0.4	0.189
7.7-8.3	030008	1.4	0.4	0.126	040008	1.8	0.4	0.203
9.7-10.3	030010	1.4	0.4	0.135	040010	1.8	0.4	0.218
11.7-12.3	030012	1.4	0.4	0.144	040012	1.8	0.4	0.232
13.7-14.3	030014	2.0	0.4	0.153	040014	1.8	0.4	0.247
15.7-16.3	030016	4.0	1.5	0.161	040016	2.0	0.4	0.261
17.7-18.3	030018	6.0	3.5	0.170	040018	4.0	1.1	0.276
19.7-20.3	030020	8.0	5.5	0.179	040020	6.0	3.1	0.291
21.7-22.3	030022	10.0	7.5	0.188	040022	8.0	5.1	0.305
23.7-24.3	030024	12.0	9.5	0.196	040024	10.0	7.1	0.320
25.7-26.3	030026	14.0	11.5	0.205	040026	12.0	9.1	0.334
27.7-28.3	030028	16.0	13.5	0.214	040028	14.0	11.1	0.349
29.7-30.3	030030	18.0	15.5	0.223	040030	16.0	13.1	0.364
31.7-32.3	030032	20.0	17.5	0.231	040032	18.0	15.1	0.378
33.7-34.3	030034	22.0	19.5	0.240	040034	20.0	17.1	0.393
35.7-36.3	030036	24.0	21.5	0.249	040036	22.0	19.1	0.407
37.7-38.3	030038	26.0	23.5	0.250	040038	24.0	21.1	0.422
39.7-40.3	030040	28.0	25.5	0.266	040040	26.0	23.1	0.436
41.7-42.3	030042	30.0	27.5	0.275	040042	28.0	25.1	0.451
43.7-44.3	—	—	—	—	040044	30.0	27.1	0.466
45.7-46.3	—	—	—	—	040046	32.0	29.1	0.480
47.7-48.3	—	—	—	—	040048	34.0	31.1	0.495
49.7-50.3	—	—	—	—	040050	36.0	33.1	0.509
51.7-52.3	—	—	—	—	040052	38.0	35.1	0.524
53.7-54.3	—	—	—	—	040054	40.0	37.1	0.539
55.7-56.3	—	—	—	—	040056	42.0	39.1	0.553

METRIC AEROSPACE STANDARD

BOLT-MACHINE, HEX HEAD, DRILLED, PD SHANK
MJ THREAD, AMS 6322, CADMIUM PLATE, METRIC

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TABLE II (CONTINUED)

L LENGTH	MJ5x0.8-4h6h				MJ6x1-4h6h			
	DASH NO. SEE NOTE	M MAX	N MIN	APPROX MASS kg/100	DASH NO. SEE NOTE	M MAX	N MIN	APPROX MASS kg/100
7.7-8.3	050008	2.1	0.5	0.259				
9.7-10.3	050010	2.1	0.5	0.282	060010	2.7	0.7	0.429
11.7-12.3	050012	2.1	0.5	0.305	060012	2.7	0.7	0.463
13.7-14.3	050014	3.1	0.5	0.329	060014	2.7	0.7	0.497
15.7-16.3	050016	2.1	0.5	0.352	060016	2.7	0.7	0.531
17.7-18.3	050018	2.1	0.5	0.375	060018	2.7	0.7	0.565
19.7-20.3	050020	4.0	0.9	0.399	060020	2.7	0.7	0.599
21.7-22.3	050022	6.0	2.9	0.422	060022	4.0	0.7	0.632
23.7-24.3	050024	8.0	4.9	0.445	060024	6.0	2.5	0.667
25.7-26.3	050026	10.0	6.9	0.468	060026	8.0	4.5	0.701
27.7-28.3	050028	12.0	8.9	0.492	060028	10.0	6.5	0.735
29.7-30.3	050030	14.0	10.9	0.515	060030	12.0	8.5	0.769
31.7-32.3	050032	16.0	12.9	0.539	060032	14.0	10.5	0.803
33.7-34.3	050034	18.0	14.9	0.562	060034	16.0	12.5	0.837
35.7-36.3	050036	20.0	16.9	0.585	060036	18.0	14.5	0.871
37.7-38.3	050038	22.0	18.9	0.608	060038	20.0	16.5	0.905
39.7-40.3	050040	24.0	20.9	0.632	060040	22.0	18.5	0.939
41.7-42.3	050042	26.0	22.9	0.655	060042	24.0	20.5	0.973
43.7-44.3	050044	28.0	24.9	0.678	060044	26.0	22.5	1.007
45.7-46.3	050046	30.0	26.9	0.702	060046	28.0	24.5	1.041
47.7-48.3	050048	32.0	28.9	0.725	060048	30.0	26.5	1.075
49.7-50.3	050050	34.0	30.9	0.748	060050	32.0	28.5	1.109
51.7-52.3	050052	36.0	32.9	0.772	060052	34.0	30.5	1.143
53.7-54.3	050054	38.0	34.9	0.795	060054	36.0	32.5	1.177
55.7-56.3	050056	40.0	36.9	0.818	060056	38.0	34.5	1.211
57.7-58.3	050058	42.0	38.9	0.842	060058	40.0	36.5	1.245
59.7-60.3	050060	44.0	40.9	0.865	060060	42.0	38.5	1.279
63.7-64.3	050064	48.0	44.9	0.912	060064	46.0	42.5	1.347
67.7-68.3	050068	52.0	48.9	0.958	060068	50.0	46.5	1.415
71.7-72.3	—	—	—	—	060072	54.0	50.5	1.483
75.7-76.3	—	—	—	—	060076	58.0	54.5	1.551
79.7-80.3	—	—	—	—	060080	62.0	58.5	1.619
83.7-84.3	—	—	—	—	060084	66.0	62.5	1.687

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BOLT-MACHINE, HEX HEAD, DRILLED, PD SHANK
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TABLE II (CONTINUED)

L LENGTH	MJ7x1-4h6h				MJ8x1-4h6h			
	DASH NO. SEE NOTE	M MAX	N MIN	APPROX. MASS kg/100	DASH NO. SEE NOTE	M MAX	N MIN	APPROX MASS kg/100
9.7-10.3	070010	2.7	0.7	0.571	080010	2.7	0.7	0.830
11.7-12.3	070012	2.7	0.7	0.642	080012	2.7	0.7	0.894
13.7-14.3	070014	2.7	0.7	0.666	080014	2.7	0.7	0.958
15.7-16.3	070016	2.7	0.7	0.713	080016	2.7	0.7	1.023
17.7-18.3	070018	2.7	0.7	0.761	080018	2.7	0.7	1.087
19.7-20.3	070020	2.7	0.7	0.809	080020	2.7	0.7	1.151
21.7-22.3	070022	2.7	0.7	0.856	080022	2.7	0.7	1.215
23.7-24.3	070024	4.0	0.7	0.904	080024	2.7	0.7	1.279
25.7-26.3	070026	6.0	2.5	0.952	080026	4.0	0.7	1.343
27.7-28.3	070028	8.0	4.5	0.999	080028	6.0	2.5	1.407
29.7-30.3	070030	10.0	6.5	1.047	080030	8.0	4.5	1.472
31.7-32.3	070032	12.0	8.5	1.095	080032	10.0	6.5	1.536
33.7-34.3	070034	14.0	10.5	1.142	080034	12.0	8.5	1.600
35.7-36.3	070034	16.0	12.5	1.190	080036	14.0	10.5	1.664
37.7-38.3	070038	18.0	14.5	1.237	080038	16.0	12.5	1.670
39.7-40.3	070040	20.0	16.5	1.285	080040	18.0	14.5	1.792
41.7-42.3	070042	22.0	18.5	1.333	080042	20.0	16.5	1.857
43.7-44.3	070044	24.0	20.5	1.380	080044	22.0	18.5	1.920
45.7-46.3	070046	26.0	22.5	1.428	080046	24.0	20.5	1.985
47.7-48.3	070048	28.0	24.5	1.476	080048	26.0	22.5	2.049
49.7-50.3	070050	30.0	26.5	1.523	080050	28.0	24.5	2.113
51.7-52.3	070052	32.0	28.5	1.571	080052	30.0	26.5	2.177
53.7-54.3	070054	34.0	30.5	1.618	080054	32.0	28.5	2.241
55.7-56.3	070056	36.0	32.5	1.555	080056	34.0	30.5	2.306
57.7-58.3	070058	38.0	34.5	1.714	080058	36.0	32.5	2.370
59.7-60.3	070060	40.0	36.5	1.761	080060	38.0	34.5	2.434
63.7-64.3	070064	44.0	40.5	1.857	080064	42.0	38.5	2.562
67.7-68.3	070068	48.0	44.5	1.952	080068	46.0	42.5	2.691
71.7-72.3	070072	52.0	48.5	2.047	080072	50.0	46.5	2.819
75.7-76.3	070076	56.0	52.5	2.142	080076	54.0	50.5	2.947
79.7-80.3	070080	60.0	56.5	2.238	080080	58.0	54.5	3.075
83.7-84.3	070084	64.0	60.5	2.333	080084	62.0	58.5	3.204
87.7-88.3	070088	68.0	64.5	2.428	080088	66.0	62.5	3.332
91.7-92.3	070092	72.0	68.5	2.523	080092	70.0	66.5	3.460
95.7-96.3	070096	76.0	72.5	2.619	080096	74.0	70.5	3.589
99.7-100.3	—	—	—	—	080100	78.0	74.5	3.717
103.7-104.3	—	—	—	—	080104	82.0	78.5	3.845
107.7-108.3	—	—	—	—	080108	86.0	82.5	3.974
111.7-112.3	—	—	—	—	080112	90.0	86.5	4.102

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TABLE II (CONTINUED)

L LENGTH	MJ10x1.25-4h6h				MJ12x1.25-4h6h			
	DASH NO. SEE NOTE	M MAX	N MIN	APPROX MASS kg/100	DASH NO. SEE NOTE	M MAX	N MIN	APPROX MASS. kg/100
13.7-14.3	100014	3.3	0.8	1.542				
15.7-16.3	100016	3.3	0.8	1.640	120016	3.4	0.9	2.432
17.7-18.3	100018	3.3	0.8	1.741	120018	3.4	0.9	2.581
19.7-20.3	100020	3.3	0.8	1.841	120020	3.4	0.9	2.729
21.7-22.3	100022	3.3	0.8	1.941	120022	3.4	0.9	2.878
23.7-24.3	100024	3.3	0.8	2.041	120024	3.4	0.9	3.027
25.7-26.3	100026	3.3	0.8	2.141	120026	3.4	0.9	3.176
27.7-28.3	100028	3.3	0.8	2.241	120028	3.4	0.9	3.324
29.7-30.3	100030	4.0	0.8	2.342	120030	3.4	0.9	3.473
31.7-32.3	100032	6.0	2.0	2.442	120032	3.4	0.9	3.622
33.7-34.3	100034	8.0	4.0	2.542	120034	4.0	0.9	3.770
35.7-37.3	100036	10.0	6.0	2.642	120036	6.0	2.0	3.919
37.7-38.3	100038	12.0	8.0	2.742	120038	8.0	4.0	4.068
39.7-40.3	100040	14.0	10.0	2.842	120040	10.0	6.0	4.217
41.7-42.3	100042	16.0	12.0	2.942	120042	12.00	8.0	4.366
43.7-44.3	100044	18.0	14.0	3.042	120044	14.0	10.0	4.515
45.7-46.3	100046	20.0	16.0	3.143	120046	16.0	12.0	4.664
47.7-48.3	100048	22.0	18.0	3.243	120048	18.0	14.0	4.813
49.7-50.3	100050	24.0	20.0	3.343	120050	20.0	16.0	4.961
51.7-52.3	100052	26.0	22.0	3.443	120052	22.0	18.0	5.110
53.7-54.3	100054	28.0	24.0	3.543	120054	24.0	20.0	5.259
55.7-56.3	100056	30.0	26.0	3.643	120056	26.0	22.0	5.407
57.7-58.3	100058	32.0	28.0	3.743	120058	28.0	24.0	5.556
59.7-60.3	100060	34.0	30.0	3.843	120060	30.0	26.0	5.705
63.7-64.3	100064	38.0	34.0	4.043	120064	34.0	30.0	6.002
67.7-68.3	100068	42.0	38.0	4.244	120068	38.0	34.0	6.300
71.7-72.3	100072	46.0	42.0	4.444	120072	42.0	38.0	6.597
75.7-76.3	100076	50.0	46.0	4.644	120076	46.0	42.0	6.895
79.7-80.3	100080	54.0	50.0	4.845	120080	50.0	46.0	7.192
83.7-84.3	100084	58.0	54.0	5.045	120084	54.0	50.0	7.489
87.7-88.3	100088	60.0	58.0	5.245	120088	58.0	54.0	7.787
91.7-92.3	100092	66.0	62.0	5.445	120092	62.0	58.0	8.084
95.7-96.3	100096	70.0	66.0	5.646	120096	66.0	62.0	8.382
99.7-100.3	100100	74.0	70.0	5.846	120100	70.0	66.0	8.679
103.7-104.3	100104	78.0	74.0	6.046	120104	74.0	70.0	8.977
107.7-108.3	100108	82.0	78.0	6.246	120108	78.0	74.0	9.274
111.7-112.3	100112	86.0	82.0	6.446	120112	82.0	78.0	9.572
115.7-116.3	100115	90.0	86.0	6.647	120116	86.0	82.0	9.869
119.7-120.3	100120	94.0	90.0	6.847	120120	90.0	86.0	10.166
123.7-124.3	100124	98.0	94.0	7.047	120124	94.0	90.0	10.464
127.7-128.3	100128	102.0	98.0	7.247	120128	98.0	94.0	10.761
131.7-132.3	100132	106.0	102.0	7.448	120132	102.0	98.0	11.059
135.7-136.3	100136	110.0	106.0	7.648	120136	106.0	102.0	11.356
139.7-140.3	100140	114.0	110.0	7.848	120140	110.0	106.0	11.654
143.7-144.3	---	---	---	---	120144	114.0	110.0	11.951
147.7-148.3	---	---	---	---	120148	118.0	114.0	12.249
151.7-152.3	---	---	---	---	120152	122.0	118.0	12.546
155.7-156.3	---	---	---	---	120156	126.0	122.0	12.843
159.7-160.3	---	---	---	---	120160	130.0	126.0	13.141
163.7-164.3	---	---	---	---	120164	134.0	130.0	13.438
167.7-168.3	---	---	---	---	120168	138.0	134.0	13.736

ISSUED 12-87 REVISED

METRIC AEROSPACE STANDARD

BOLT-MACHINE, HEX HEAD, DRILLED, PD SHANK,
MJ THREAD, AMS 6322, CADMIUM PLATE, METRIC

MA 3304

SHEET 5 OF 7