Aerospace Industries Association

NATIONAL AEROSPACE STANDARD

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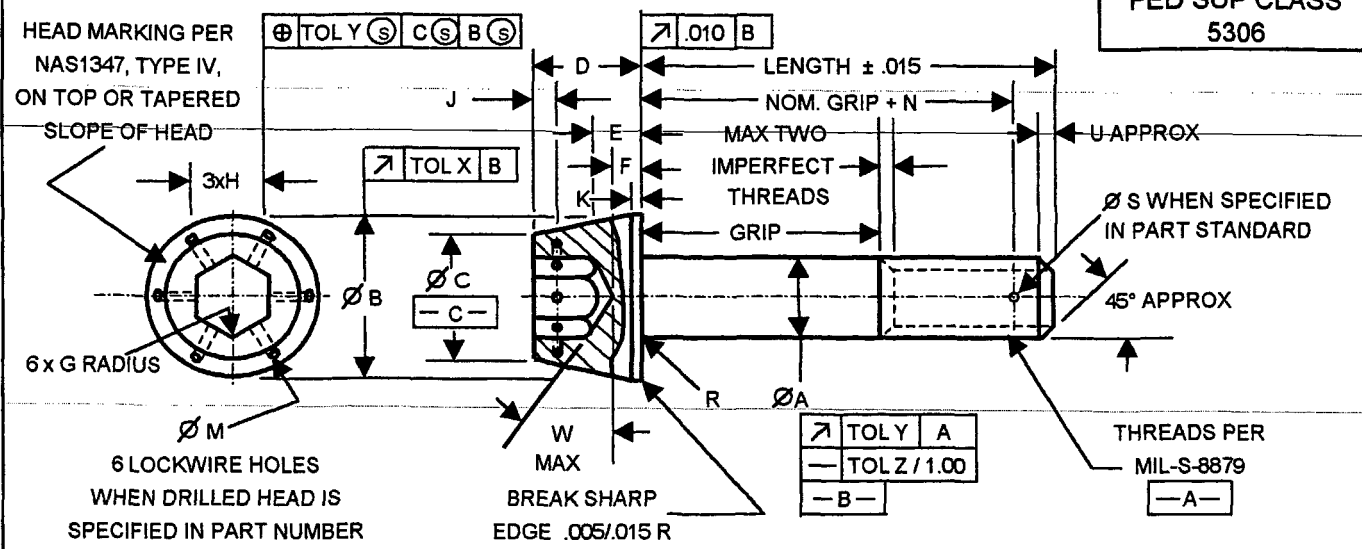

TABLE I

BASIC PART NUMBER	THREAD	ØA MAX	ØA MIN	ØB MAX	ØB MIN	ØC	D	E	F MIN	G RAD MAX	H HEX MAX	H HEX MIN
NAS144	.2500-28 UNJF-3A	.2490	.2460	.438	.430	.381	.226	.122	.072	.010	.2210	.2190
NAS145	.3125-24 UNJF-3A	.3115	.3085	.531	.523	.501	.276	.142	.075	.010	.3150	.3130
NAS146	.3750-24 UNJF-3A	.3740	.3710	.625	.615	.583	.343	.170	.091	.011	.3785	.3755
NAS147	.4375-20 UNJF-3A	.4365	.4330	.750	.740	.594	.407	.209	.130	.011	.3785	.3755
NAS148	.5000-20 UNJF-3A	.4990	.4955	.813	.802	.751	.460	.223	.130	.011	.5035	.5005
NAS149	.5625-18 UNJF-3A	.5615	.5575	.938	.927	.775	.529	.261	.160	.011	.5035	.5005
NAS150	.6250-18 UNJF-3A	.6240	.6200	1.000	.988	.850	.595	.268	.175	.019	.5660	.5630
NAS152	.7500-16 UNJF-3A	.7490	.7445	1.188	1.175	.936	.732	.357	.232	.022	.6297	.6257
NAS154	.8750-14 UNJF-3A	.8740	.8690	1.438	1.424	1.098	.846	.406	.259	.022	.7547	.7507
NAS156	1.0000-14 UNJ-3A	.9990	.9935	1.625	1.609	1.405	.952	.434	.259	.022	1.0050	1.0010
NAS158	1.1250-12 UNJF-3A	1.1240	1.1180	1.875	1.857	1.423	1.091	.512	.320	.022	1.0050	1.0010

BASIC PART NUMBER	J	K	ØM +.005 -.000	N	R MAX	R MIN	ØS +.005 -.000	U	W DEG. MAX	RUNOUT & SHANK STRAIGHTNESS TOLERANCE X	Y	Z	TENSILE TEST LBS MIN
NAS144	.063	.063	.046	.3438	.041	.026	.076	.03	20	.006	.0045	.0040	5,000
NAS145	.063	.063	.070	.3906	.041	.026	.076	.05	20	.008	.0045	.0030	8,200
NAS146	.094	.063	.070	.4688	.057	.042	.106	.05	20	.009	.0060	.0030	12,700
NAS147	.094	.063	.070	.5156	.057	.042	.106	.05	20	.010	.0060	.0025	17,100
NAS148	.094	.063	.070	.6250	.057	.042	.106	.05	18	.011	.0060	.0025	23,400
NAS149	.125	.094	.070	.6719	.057	.042	.141	.06	20	.012	.0060	.0020	29,800
NAS150	.188	.094	.070	.7500	.073	.058	.141	.06	20	.015	.0060	.0020	38,000
NAS152	.188	.094	.070	.8750	.073	.058	.141	.06	20	.018	.0090	.0020	55,600
NAS154	.188	.094	.070	.9688	.073	.058	.141	.08	20	.020	.0090	.0020	76,200
NAS156	.188	.094	.070	1.1250	.073	.058	.141	.08	18.5	.022	.0090	.0020	102,500
NAS158	.188	.094	.070	1.1875	.073	.058	.141	.09	20	.025	.0090	.0020	128,800

INACTIVE FOR NEW DESIGN AFTER OCTOBER 1, 1986.
USE MS20004 THRU MS20024
FOR DESCRIPTION OF STATUS NOTES, SEE NAS380
(12) COMPLETELY REVISED

(12) LIST OF CURRENT SHEETS

SHEET	REV	SHEET	REV
1	12	3	NEW
2	9	4	NEW

CUSTODIAN **NATIONAL AEROSPACE STANDARDS COMMITTEE**

THIRD ANGLE PROJECTION

PROCUREMENT SPECIFICATION
AS NOTED

TITLE
BOLT - INTERNAL WRENCHING - STEEL
.2500-28 THRU 1.1250-12

CLASSIFICATION
PART STANDARD
NAS144 THRU 158
SHEET 1 OF 4

APPROVAL DATE: MAY 1942 REVISION: (12) FEB 2002

AEROSPACE INDUSTRIES ASSOCIATION OF AMERICA, INC.
1250 EYE STREET, N. W.
WASHINGTON, D. C. 2005-3924

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MATERIAL: ALLOY STEEL IN ACCORDANCE WITH THE PROCUREMENT SPECIFICATION.

HEAT TREAT: 160,000 TO 180,000 PSI TENSILE STRENGTH IN ACCORDANCE WITH THE PROCUREMENT SPECIFICATION.

FINISH: CADMIUM PLATING PER QQ-P-416, TYPE II, CLASS 2.

CODE: ADD "DH" TO THE PART NUMBER TO DESIGNATE DRILLED HEAD.
ADD "A" TO THE PART NUMBER TO DESIGNATE DRILLED SHANK.
FOR SUFFIX DASH NUMBER TO DESIGNATE GRIP AND LENGTH, SEE TABLE II.

EXAMPLES:
NAS144-25 = .2500-28 BOLT, 1.5625 INCHES LONG, UNDRILLED.
NAS144DH -25 = .2500-28 BOLT, 1.5625 INCHES LONG, DRILLED HEAD.
NAS144ADH-25 = .2500-28 BOLT, 1.5625 INCHES LONG, DRILLED HEAD AND SHANK.

NOTES:

1. SURFACE TEXTURE: PER ASME B46.1.
   SHANK, HEAD BEARING SURFACE, AND THREADS, 32 MICROINCHES Ra.
   FILLET RADIUS, 20 MICROINCHES Ra.
   ALL OTHER SURFACES, 125 MICROINCHES Ra.
2. MAGNETIC PARTICLE INSPECTION: 100% PER ASTM E1444.
3. TOLERANCE: UNLESS OTHERWISE SPECIFIED, ± .010.
4. DIMENSIONS: IN INCHES, PER ANSI Y14.5M - 1982.
5. APPLICABLE WASHERS, MS20002 AND NAS1587.
6. LOCK WIRE HOLES SHALL BE FREE OF BURRS AND SHARP EDGES.
7. ALL DIMENSIONS APPLY AFTER PLATING.
8. PROCUREMENT SPECIFICATION: NAS4002 EXCEPT;
   a) PERIPHERY OF TAPERED HEAD AND SOCKET RECESS MAY BE MACHINED.
   b) "R" ON HEAD OR POINT END OF BOLT INDICATES THREADS HAVE BEEN ROLLED AFTER HEAT TREAT.
   c) TRACES OF PARTIAL DECARBURIZATION MAY APPEAR IN A LAYER NOT TO EXCEED:
      .002 IN DEPTH FOR NOM DIAMETERS .2500 THRU .5000.
      .003 IN DEPTH FOR NOM DIAMETERS .5625 THRU 1.0000.
      .004 IN DEPTH FOR NOM DIAMETERS 1.1250.
   d) COLD WORK OF HEAD TO SHANK FILLET RADIUS NOT REQUIRED.
   e) FATIGUE CAPABILITIES AND TESTS NOT REQUIRED.

(9) COMPLETELY REVISED.

APPROVAL DATE: MAY 1942 REVISION: (9) FEB 2002

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