

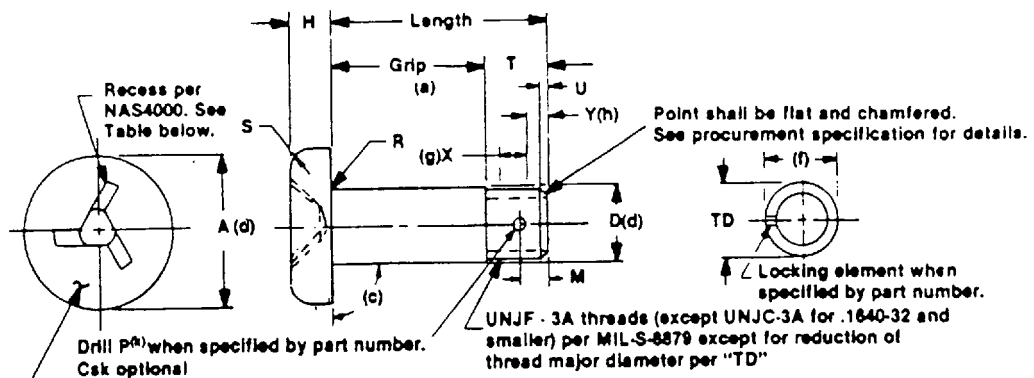


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NATIONAL AEROSPACE STANDARD

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FED. SUP CLASS
5306



Head marking shall be raised or depressed (.010 max) and arranged as follows:

- First Sector** - Mark with basic part number ("NAS" optional) except mark .1120-40 size with "4", .1380-32 size with "8", .1640-32 size with "8" and (optional) .1900-32 size with "10". These sizes also to be marked "C" for A286.
- Second Sector** - Mark with manufacturer's symbol or trademark (symbol location optional in any sector), grip dash number and "D", "L" or "P", when applicable. (i) "L" identifies bolts with optional locking element. "P" identifies bolts with patch type. "D" identifies bolts with drilled shank.
- Third Sector** - Mark with recess number encircled. Recess number should be approximately 25% larger than other numerals in head marking.

BASIC NUMBER	Nom Thread Size	A Dia	D Dia		H	M	P(h)	R	S	T (Ref) (b)	TD	U Max	X (g)	Y (h)
			Unplated	Plated or Coated										
NAS5100	.1120-40	.218	.1118	.1107	.1118	.088		.010	.031	.236	.1084	.031	.125	.075
		.206	.1110	.1101	.1106	.088								
NAS5101	.1380-32	.370	.1375	.1367	.1375	.086		.006	.043	.276	.1340			
		.286	.1370	.1361	.1366	.074								
NAS5102	.1640-32	.322	.1635	.1627	.1635	.102			.060	.323	.1806	.030	.156	.094
		.308	.1630	.1621	.1626	.088								
NAS5103	.1900-32	.373	.1886	.1877	.1886	.114	.070	.020	.064	.323	.1840			
		.357	.1880	.1871	.1876	.102								
NAS5103J	.1900-32	.373	.1886	.1877	.1886	.114	.078	.010	.064	.323	.1840			
		.357	.1880	.1871	.1876	.102								
NAS5104	.2500-28	.482	.2485	.2467	.2485	.180	.078	.061	.078	.370	.2440	.046	.178	.107
		.473	.2480	.2461	.2466	.163								
NAS5106	.3125-24	.815	.3120	.3112	.3120	.183			.108	.438	.3080		.208	.125
		.584	.3115	.3106	.3110	.162								
NAS5106	.3780-24	.740	.3748	.3737	.3748	.215	.108	.025	.144	.484	.3880			
		.718	.3740	.3731	.3736	.191								

BASIC NUMBER	AA (d)	BB (e)	Recess Number
NAS5100	.0045	.0040	NAS4000-2
NAS5101			NAS4000-3
NAS5102			NAS4000-4
NAS5103			NAS4000-5
NAS5103J	.0030	.0030	NAS4000-4J
NAS5104			NAS4000-6
NAS5105			NAS4000-7
NAS5106			NAS4000-8

**INACTIVE FOR NEW DESIGN
AFTER JANUARY 1, 1986
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⑦ FOR DESCRIPTION OF STATUS NOTES SEE NAS380

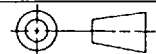
LIST OF CURRENT SHEETS

NO.	REV.
1	7
2	6
3	3
4	5

(a), (b), etc.: see notes on Sh. 2.

CUSTODIAN NATIONAL AEROSPACE STANDARDS COMMITTEE

THIRD
ANGLE
PROJECTION



PROCUREMENT
SPECIFICATION

TITLE

CLASSIFICATION

NOTED ON
SHEET 2

**BOLT, PAN HEAD, CLOSE TOLERANCE,
SHORT THREAD, TRI-SLOT RECESS,
A286 CRES, SELF-LOCKING AND NONLOCKING**

STANDARD PART

NAS 5100 THRU 5106

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AEROSPACE INDUSTRIES ASSOCIATION OF AMERICA, INC.
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THIS DRAWING SUPERSEDES ALL ANTECEDENT STANDARD DRAWINGS FOR THE
SAME PRODUCT AND SHALL BECOME EFFECTIVE NO LATER THAN SIX MONTHS
FROM THE LAST DATE OF APPROVAL SHOWN HEREON.

⑥

MATERIAL: A286 (UNS S66286) CRES conforming to the chemistry of AMS5731, AMS5732, AMS5737 or AMS5853. Locking element: Plastic per MIL-F-18240 and QPL18240.

⑥

HEAT TREAT: Develop basic material properties as follows with controls per MIL-H-6875: 160 - 190 KSI Ft_u, 95 KSI Ft_s, Precipitation hardening per AMS5853. See note (q).

FINISH: Unplated Bolts - Passivate to meet requirements of NAS4003
Cadmium Plated Bolts - Cadmium plate per QQ-P-416, Type II, Class 2

⑥

Parts plated to Class 3 may be used until stock depleted. Post-plate hydrogen embrittlement baking and testing per QQ-P-416 are not required for A286 material.
Chromium Plated Bolts - Chromium plate per QQ-P-370, Class 2 on shank only. All other surfaces Cadmium plated, No Chromium within .020 of line of tangency of head-to-shank fillet. Chromium in thread not permitted. Not required for -1 or -2 grips.
Coated Bolts - Aluminum coating per NAS4006.
Cadmium plated A-286 CRES bolts shall be identified with green dye or paint on the thread and Maximum coverage may include the chamfer plus one incomplete thread.

CODE: Dash number indicates grip in .0625 increments. See Sheet 3 for tabulation of grip and length.
Add "A" after basic number for aluminum coated bolts. May be used with "D", "L" or "P" codes.
Add "C" after basic number for chromium plated bolts. May be used with "D", "L" or "P" codes.
Add "D" after basic number for drilled shank bolts.
Add "L" after basic number for self-locking bolts, optional configuration.
Add "P" after basic number for self-locking bolts, patch type.
Add "U" after basic number for unplated bolts.
Add "J" as the fifth digit in basic four-digit part number for the deep number 4 recess

Examples of part numbers.

NAS5103-10 = Bolt, .1900-32 thread, .625 grip, nonlocking, plated.
NAS5103A10 = Bolt, .1900-32 thread, .625 grip, nonlocking, aluminum coating.
NAS5103L10 = Bolt, .1900-32 thread, .625 grip, self-locking, optional configuration, plated.
NAS5103LU10 = Bolt, .1900-32 thread, .625 grip, self-locking, optional configuration, unplated.
NAS5103PU10 = Bolt, .1900-32 thread, .625 grip, self-locking, patch type, unplated.
NAS5103JA10 = Bolt, .1900-32 thread, .625 grip, nonlocked, plated, aluminum coating 4J recess.

- NOTES:**
- Grip length of bolts shall be measured from the underside of head to the end of the full cylindrical portion of the shank.
 - Reference dimensions are for design purposes only, not an inspection requirement.
 - Bearing surface squareness: Within .003 FIM of shank diameter.
 - Concentricity: Outside diameter "A" to "D" diameter within .008 FIM; "D" diameter to thread pitch diameter within "AA" values.
 - Shank straightness: Within "BB" values FIM per inch of length.
 - Protrusion of locking element shall be controlled so that it will pass freely, or with finger pressure, through a ring gage with diameter of .010 (+ .001 - .000) greater than maximum major diameter of screw thread.
 - "X" minimum (5 thread pitches) = region of minimum engagement of female thread required to meet MIL-F-18240 requirements. Locking element within "X" region must develop required torque when tested per MIL-F-18240.
 - For ease of starting, locking element shall not be effective in "Y" area (3 thread pitches).
 - Cotter pin hole centerline within .010 and normal within 2° of bolt centerline.
 - "A", aluminum coated and "U", unplated codes need not appear on the head.
 - Magnetic permeability shall be less than 2.0 (Air = 1.0) for a field strength $H = 200$ oersteds using a magnetic permeability indicator per ASTM A342, Method 6.
 - Parts to revision 5 may be furnished from supplier stock until (6 months from date of mailing).
 - If required, tensile testing of bolts requiring cross-drilled threads shall be performed prior to drilling and the application of plating and/or coatings. When bolts have been drilled, strength may be verified by shear testing, in lieu of tensile testing, in accordance with MIL-STD-1312. Users should be aware that fasteners with cross-drilled threads may exhibit a reduction in tensile strength.
 - The effect of cold work and aging induced during the manufacturing cycle may increase the ultimate tensile value of the finished part, but this shall not exceed 1.3 times the specified minimum tensile value.

SURFACE TEXTURE: (AA max per ANSI/ASME B46.1) "D" dia, bearing surface of head, thread flanks and thread root 32; other surfaces 125.

Dimensions to be met after plating or coating.
Dimensions in inches.

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NAS 5103-10 SH 2
Documents
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29 March 1996

⑥

18 Sept. 1992

⑤

15 August 1986

④

17 Dec. 1979

③

15 Feb. 1972

②

16 March 1970

①

REVISION

Dec. 1968

APPROVAL DATE

1