

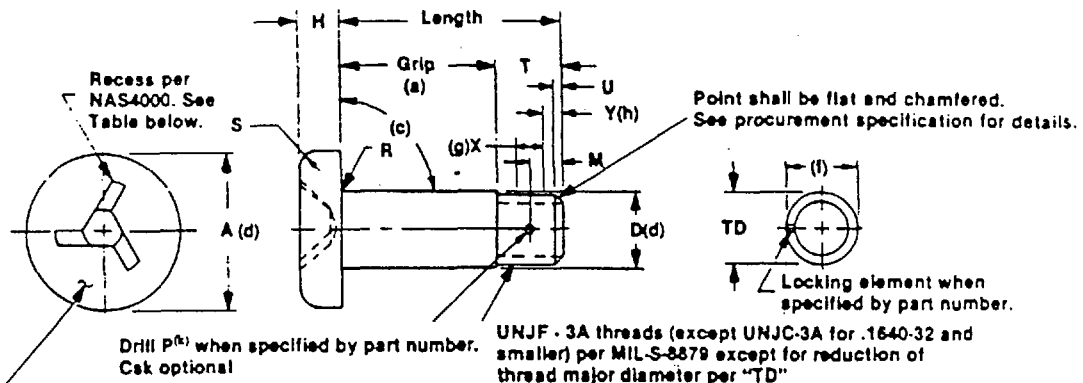


**Aerospace  
Industries  
Association**

# NATIONAL AEROSPACE STANDARD

© COPYRIGHT 1996 AEROSPACE INDUSTRIES ASSOCIATION OF AMERICA, INC. ALL RIGHTS RESERVED

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 "6", .1640-32 size with "8" and (optional) .1900-32 size with "10". These sizes also to be marked "V" for Titanium.
- Second Sector** - Mark with manufacturer's symbol or trademark (symbol location optional in any sector), grip dash number and "L" or "P", when applicable. (1)  
"L" identifies bolts with optional locking element.  
"P" identifies bolts with patch type locking element only.  
"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 Rad        | S            | T (Ref (b))  | TD             | U Max          | X (g.) | Y (h) |
|--------------|-----------------|--------------|----------------|-------------------------------|----------------|--------------|--------------|--------------|--------------|--------------|----------------|----------------|--------|-------|
|              |                 |              | Unplated       | Plated or Coated Before After |                |              |              |              |              |              |                |                |        |       |
| NAS5200      | .1120-40        | .218<br>.205 | .1115<br>.1110 | .1107<br>.1101                | .1115<br>.1105 | .088<br>.058 |              | .010         | .031<br>.041 | .238         | .1085<br>.1085 | .031           | .125   | .075  |
| NAS5201      | .1380-32        | .270<br>.256 | .1375<br>.1370 | .1367<br>.1361                | .1375<br>.1365 | .088<br>.074 |              | .008         | .043<br>.053 | .278         | .1340<br>.1315 |                |        |       |
| NAS5202      | .1640-32        | .322<br>.306 | .1835<br>.1830 | .1827<br>.1821                | .1835<br>.1825 | .102<br>.088 |              | .020         | .050<br>.060 | .323         | .1595<br>.1570 |                |        |       |
| NAS5203      | .1900-32        | .373<br>.357 | .1895<br>.1890 | .1887<br>.1881                | .1895<br>.1885 | .118<br>.103 | .070<br>.075 | .020         | .054<br>.064 | .323         | .1840<br>.1810 |                |        |       |
| NAS5203J     | .1900-32        | .373<br>.357 | .1895<br>.1890 | .1887<br>.1881                | .1895<br>.1885 | .118<br>.103 | .070<br>.075 | .010         | .054<br>.064 | .323         | .1840<br>.1810 |                |        |       |
| NAS5204      | .2500-28        | .482<br>.473 | .2485<br>.2480 | .2487<br>.2481                | .2485<br>.2475 | .150<br>.133 | .078<br>.061 | .020         | .078<br>.088 | .370         | .2440<br>.2410 | .045           | .179   | .107  |
| NAS5205      | .3125-24        | .615<br>.584 | .3120<br>.3115 | .3112<br>.3106                | .3120<br>.3110 | .183<br>.162 | .182<br>.172 |              | .108<br>.118 | .438         | .3080<br>.3020 | .052           | .208   | .125  |
| NAS5206      | .3750-24        | .740<br>.718 | .3745<br>.3740 | .3737<br>.3731                | .3745<br>.3735 | .215<br>.191 | .193<br>.173 | .108<br>.111 | .025<br>.015 | .144<br>.164 | .454<br>.464   | .3680<br>.3640 |        |       |

| BASIC NUMBER | AA (d) | BB (e) | Recess Number |
|--------------|--------|--------|---------------|
| NAS5200      | .0045  | .0040  | NAS4000-2     |
| NAS5201      |        |        | NAS4000-3     |
| NAS5202      |        |        | NAS4000-4     |
| NAS5203      |        |        | NAS4000-5     |
| NAS5203J     |        |        | NAS4700-4J    |
| NAS5204      | .0030  | .0025  | NAS4000-6     |
| NAS5205      |        |        | NAS4000-7     |
| NAS5206      |        |        | NAS4000-8     |

**INACTIVE FOR NEW DESIGN  
AFTER JANUARY 1, 1986  
NO SUPERSEDING STANDARD**

## LIST OF CURRENT SHEETS

| NO | REV. |
|----|------|
| 1  | 8    |
| 2  | 7    |
| 3  | 2    |
| 4  | 5    |

(a), (b), Etc.: See notes on Sheet 2

FOR DESCRIPTION OF STATUS NOTES SEE  
NAS380

|                                                  |                                                                                                                    |                        |
|--------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|------------------------|
| 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, TITANIUM ALLOY 6AL-4V, SELF-LOCKING AND NONLOCKING | STANDARD PART          |
|                                                  |                                                                                                                    | NAS 5200 THRU 5206     |

USE OF OR RELIANCE UPON THIS DOCUMENT OR ANY NATIONAL AEROSPACE STANDARD IS ENTIRELY VOLUNTARY. AIA DOES NOT GUARANTEE SUPPLIERS OR CERTIFY CONFORMANCE OF ITEMS PRODUCED UNDER NATIONAL AEROSPACE STANDARDS. AIA MAKES NO REPRESENTATION OR CLAIM RESPECTING (1) THE SUITABILITY OF ITEMS FOR ANY PARTICULAR APPLICATION, OR (2) THE EXISTENCE OF OR APPLICABILITY THERETO OF PATENT OR TRADEMARK RIGHTS.

# NATIONAL AEROSPACE STANDARD

AEROSPACE INDUSTRIES ASSOCIATION OF AMERICA, INC. 1725 DE SALES STREET, N.W. WASHINGTON, D. C. 20036

© COPYRIGHT 1996 AEROSPACE INDUSTRIES ASSOCIATION OF AMERICA, INC. ALL RIGHTS RESERVED

**MATERIAL:** 6Al-4V (UNSR56400) Titanium Alloy per AMS 4928 or AMS 4967, Locking element: Plastic per MIL-F-18240 and QPL18240.

**HEAT TREAT:** Develop basic material properties as follows with controls per MIL-H-6875; 160 - 180 KSI Ft<sub>u</sub>, 95 KSI FSU per AMS 4928 or AMS4967

**FINISH:** Unplated Bolts - None

- \* ~~Plated Bolts - Cadmium plate per QQ-P-416, Type II, Class 2, except a nickel strike may be used prior to cadmium plating. Parts plated to Class 3 may be used until stock depleted.~~
- Coated Bolts - Aluminum coating per NAS4006
- \* ~~Cadmium plated 6Al-4V titanium alloy bolts shall be identified with red dye or paint on the thread end. Maximum coverage may include the chamfer plus one incomplete thread.~~
- \* Cadmium plated bolts Inactive for New Design after January 6, 1996.

**CODE:** Dash number indicates grip in .0625 increments. See Sheet 3 for tabulation of grip and length dimensions.  
 Add "A" after basic number for aluminum coated bolts. May be used with "D", "L" or "P" codes.  
 Add "D" after basic number for drilled shank.  
 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:

- \*NAS5203-10 = Bolt, .1900-32 thread, .625 grip, nonlocking, plated.
- NAS5203A10 = Bolt, .1900-32 thread, .625 grip, nonlocking, aluminum coated.
- \*~~NAS5203L10 = Bolt, .1900-32 thread, .625 grip, self-locking, optional configuration, plated.~~
- NAS5203LU10 = Bolt, .1900-32 thread, .625 grip, self-locking, optional configuration, unplated.
- NAS5203PU10 = Bolt, .1900-32 thread, .625 grip, self-locking, patch type, unplated.
- NAS5203JA10 = Bolt, .1900-32 thread, .625 grip, nonlocking, aluminum coated 4J recess.

- NOTES:**
- (a) Grip length of bolt shall be measured from the underside of head to the end of the full cylindrical portion of the shank.
  - (b) Reference dimensions are for design purposes only, not an inspection requirement.
  - (c) Bearing surface squareness: Within .003 FIM of shank diameter.
  - (d) Concentricity: Outside diameter "A" to "D" diameter within .008 FIM;  
 "D" diameter to thread pitch diameter within "AA" values.
  - (e) Shank straightness: Within "BB" values FIM per inch of length.
  - (f) 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.
  - (g) "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.
  - (h) For ease of starting, locking element shall not be effective in "Y" area (3 thread pitches).
  - (k) Cotter pin hole centerline within .010 and normal within 2° of bolt centerline.
  - (l) "A", aluminum coated and "U", unplated codes need not appear on the head.
  - (n) 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.

**SURFACE TEXTURE:** (AA max per ANS/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.

**PROCUREMENT SPECIFICATION:** NAS4004, except as noted. Cold working of head to shank fillet is not required for NAS5200 thru 5203 bolts. Locking element for self-locking bolts: per MS15981 and MIL-F-18240. Any type or configuration of locking element is optional when "L" code is specified. Patch type locking element (with no metal removed) is required when "P" code is specified. Locking element must be supplied by a qualified source listed in QPL18240 or approved for listing in QPL18240. Shipping notice should identify supplier of bolts and locking element separately.

**INACTIVE FOR NEW DESIGN  
 AFTER JANUARY 1, 1986  
 NO SUPERSEDING STANDARD**

NAS 5200 THRU 5206

Documents

USE OF OR RELIANCE UPON THIS DOCUMENT OR ANY NATIONAL AEROSPACE STANDARD IS ENTIRELY VOLUNTARY. AIA DOES NOT QUALIFY SUPPLIERS OR CERTIFY CONFORMANCE OF ITEMS PRODUCED UNDER NATIONAL AEROSPACE STANDARDS. AIA MAKES NO REPRESENTATION OR CLAIM RESPECTING THE SUITABILITY OF ITEMS FOR ANY PARTICULAR APPLICATION, OR THE EXISTENCE OF OR APPLICABILITY THEREOF OF PATENT OR TRADEMARK RIGHTS.

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.

APPROVAL DATE 16 March 1970 2 15 Feb. 1972 3 30 June 1972 4 17 Dec. 1979 5 15 August 1985 6 29 March 1996 7 5 December 1996