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**NUT - HEXAGONAL, SELF-LOCKING**

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This standard specifies the dimensions, tolerances, required characteristics and the masses of a self-locking hexagonal nut.

**2 - REFERENCES**

ABS1420	: Nut - Ordinary, for lightweight threaded pins.
AMS4928	: Titanium alloys bars, wire, forgings, and rings 6AL-4V annealed.
AMS4967	: Titanium alloys bars, wire, forgings, and rings 6AL-4V annealed, heat treatable.
AMS6322	: Steel Bars, Forgings, and Rings (SAE 8740).
AMS6415	: Steel Bars, Forgings, and Tubing (SAE 4340).
AMS-QQ-P-416	: Plating, cadmium (electrodeposited).
AMS-S-5000	: Steel, Chrome-Nickel-Molybdenum (E4340) Bars and Reforging Stock.
ASMEB46-1	: Surface texture (surface roughness, waviness, and lay).
ASNA2846	: Material – Equivalent, for fasteners.
EN2424	: Aerospace series - Marking of aerospace products.
EN4473	: Aerospace series – Aluminium pigmented coatings – Technical specification.

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EN6117 : Specification for lubrication of bolts with cetyl alcohol.  
NASM25027 : Nut, self-locking, 250 °F, 450 °F, 800 °F.  
SAE AS8879 : Screw threads – UNJ profile, inch - Controlled radius root with increased minor diameter.

## 3 - TERMINOLOGY

Not applicable.

## 4 - REQUIRED CHARACTERISTICS

### 4.1 - Configuration, dimensions, tolerances, mass

4.1.1 - Configuration shall be in accordance with the figure.

4.1.2 - Dimensions shall be in accordance with the figure and table 1.

All dimensions are given after finish, but before lubrication.

4.1.3 - Tolerances shall be in accordance with table 1.

4.1.4 - Mass shall be in accordance with table 1.

### 4.2 - Material, finish, lubrication

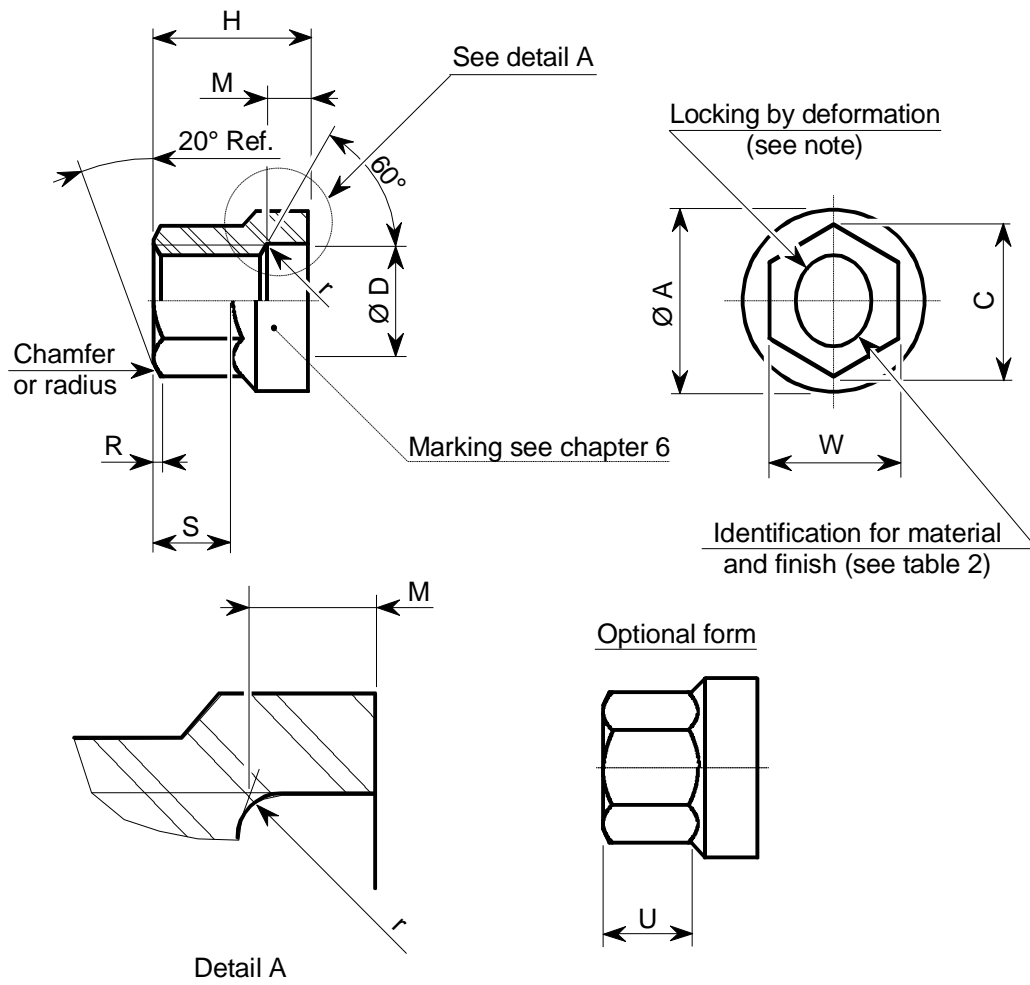
Material, finish and lubrication shall be in accordance with table 2.

### 4.3 - General characteristics

4.3.1 - Max. operating temperature : +235 °C for steel nut and +315 °C for titanium nut.

4.3.2 - Surface conditions as per ASMEB46-1

- Bearing surfaces (washer and nut spherical radius, ...) Ra 3,2 µm.
- Other surfaces Ra 3,2 µm.



Dimensions in mm.

Note: Tool mark or distortion permissible in the locking area.

Figure - Configuration, dimensions

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Table 1 - Dimensions, tolerances, mass

Ø CODE No.	THREAD as per SAE AS8879	Ø A max.	C Ref.	Ø D min.		H ± 0,254	M min.	r Ref.	S min. = U min.	W <sup>1)</sup> max. min.	R max. min.	Min. AXIAL TENSILE STRENGTH (daN)	MASS (kg/1 000 parts) For information only	
				Steel	Titan.								Steel	Titan.
2	.1640-32 UNJC-3B	7,37	6,36	4,20		5,84	2,25	0,5	2,06	5,66 5,36	0,30 0,10	880	1,000	0,620
3	.1900-32 UNJF-3B	9,02	7,24	5,66		6,30	2,54	0,8	2,06	6,37 6,17		1 240	1,200	0,740
3A	.2160-28 UNJF-3B	10,00	8,30	6,15		6,70	2,39		2,46	7,19 6,88		1 700	1,800	1,108
4	.2500-28 UNJF-3B	11,18	9,07	7,19	7,23	7,11	2,64	1,0	2,80	7,95 7,75		2 350	2,000	1,230
5	.3125-24 UNJF-3B	13,59	10,90	8,74	8,82	8,31	2,69		3,00	9,55 9,32		3 600	3,500	2,150
6	.3750-24 UNJF-3B	17,35	14,58	10,31	10,41	9,30	2,74	1,2	3,50	12,75 12,50	0,85 0,20	5 800	7,100	4,370
7	.4375-20 UNJF-3B	19,69	16,38	11,94	11,99	10,49	2,84	1,4	4,00	14,32 14,05		7 600	10,100	6,220
8	.5000-20 UNJF-3B	22,35	19,93	13,51	13,58	11,30	2,90	1,6	4,28	17,45 17,07		10 200	15,700	9,660
9	.5625-18 UNJF-3B	23,50	21,73	15,29		12,80	3,00		4,86	19,05 18,67	1,00 0,30	12 900	18,700	11,510
10	.6250-18 UNJF-3B	25,40	23,87	16,87		14,20			6,70	20,86 20,48		14 234	22,200	13,660
12	.7500-16 UNJF-3B	31,10	25,40	22,10		16,90	3,40		6,35	22,30 21,90		20 865	39,800	24,490
14	.8750-14 UNJF-3B	38,10	30,80	26,30		22,00	3,70		9,20	27,00 26,70	1,20 0,50	28 123	88,900	54,710
16	1.0000-12 UNJF-3B	43,10	34,50	30,20		25,00	4,00	10,52	30,23 29,90	38 101		130,180	80,110	

1) Dimensions shall be applicable prior to incorporation of the locking feature (as per NASM25027).

Dimensions in mm.

Table 2 - Material, finish, lubrication

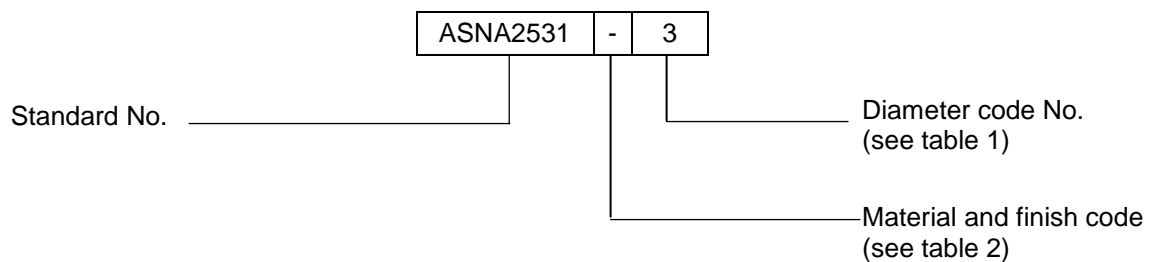
MATERIAL AND FINISH CODE	MATERIAL	FINISH	LUBRICATION	IDENTIFICATION
-	Alloy steel 8740 as per AMS6322 or 4340 as per AMS6415 or AMS-S-5000 or equivalent as per ASNA2846 Hardness 39-43 HRC	Cadmium plating as per AMS-QQ-P-416 type II, class 2	Cetyl alcohol as per EN6117	None
⌈	<del>Titanium alloy 6AL-4V</del> as per <del>AMS4928 or AMS4967</del> Re min. = 590 MPa R min. = 900 MPa (annealed)	<del>Resin based Al coating as per</del> EN4473 type IV		White paint on the top of nut (see the figure)

## 5 - DESIGNATION

Example of part number identification to be used on drawing schedules:

ASNA2531-3 , Nut

Example of part number construction:



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## 6 - MARKING

Parts shall be marked as per EN2424, style F.

As alternatives to the figure, marking can be tolerated on the hexagon (locking mark) or on the flanged area.

## 7 - TECHNICAL SPECIFICATION

ABS1420. Additional requirements for ASNA2531-2 not covered in ABS1420 are contained in Annex A.

## 8 - MANUFACTURERS

Refer to the list of qualified manufacturers and products.

**Annex A**

Technical requirements for ASNA2531-2 in addition to ABS1420.

- a) Maximum Locking torque: 0,1 daNm
- b) Minimum Breakaway torque: 0,015 daNm
- c) Preload requirement: Tightening torque 0,19 daNm, Preload Min/Max: 200/585daN
- d) Industrial installation test: Tightening torque 0,19 daNm.

**Test bolts:**

- Test a) to c): Titanium 6AL-4V Resin based Aluminium as per EN4473 type I + Cetyl alcohol (as per EN6117). Thread: UNJC 3A 0.1640-32; Pitch diameter 3594 - 3,620 mm; TD 4,013 – 4,039 mm
- Test d): Titanium 6AL-4V Sulphuric-acid anodizing as per ISO8080 + Cetyl alcohol (as per EN6117). Bolts as per EN6114 and EN6115.

**Nut - Go Thread gauge dimension:**

- Pitch diameter 3,618 – 3,626 mm; TD 4,008 – 4,034 mm

## AMENDMENT RECORD SHEET

Issue	Modified paragraph	Modification summary	Justification
A.05.88		New standard.	
B.10.88		Chamfer added in figure. Values of dimensions W and T modified in table 1.	Following note EG/ST437.127/88 Annex 3
C.04.89		Dimensions C and H modified in table 1. In figure : knurling for identification of diameter code No. 10 added.	A320
D.10.90		In table 1 : mass in kg/100 changed to mass in kg/1 000.	Following mistake
E.04.91		In table, values of mass modified.	Note 216.338/90 of A.DP.SM.MA
F.01.99		Standard amended. In table 1, thread modified for Ø code No. 4 : 0.2599-28 changed to 0.2500-28. Ø code No. 12 added.	Following mistake  A 340/600
G.01.00		Knurled flange of diameter code No. 10 deleted in figure. Dimension W modified in table 1 for diameter code No. 10 : 19,05/18,67 mm changed to 20,86/20,48 mm.	Note 564.2323/99 JLM No. 0440293/99
H.02.02		Standard fully amended. Diameter code Nos 14 and 16 added.	A 380
J.09.02		Diameter code Nos 2 and 3A added.	A 380
K.09.06		Titanium material added. Chapter 2 updated. "Go thread gage penetration .....in the deformation area." deleted in § 4.3. Surface conditions and operating temperatures added in § 4.3. Optional form added in the figure. Min. requirement for radius or chamfer height. Tolerance for H changed.	RFP All programs

**NOTE :** Modification to the last standard issue are indicated by a vertical line in the margin.



## AMENDMENT RECORD SHEET

Issue	Modified paragraph	Modification summary	Justification
		W dimensions applicable before locking deformation. Dimensions D, S and U added. Marking location alternatives. 4340 steel alloy material alternative added. ASNA2845 changed to ABS1420.	
L.06.14	Annex A Table 1  Table 2 7	New Code 2: value for s min to 2,06 changed In column mass: for titanium values lined through Material code T: Not for new design Requirements for ASNA2531-2 added	A350 need for -2 diameter  For Material code T no customer need

**NOTE :** Modification to the last standard issue are indicated by a vertical line in the margin.