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**NUT - SELF-LOCKING, WITH A SPHERICAL JOINT  
AND A SELF-ALIGNMENT WASHER (slope 5° max.)**

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**SUMMARY**

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**AMENDMENT RECORD SHEET****1 - SCOPE AND FIELD OF APPLICATION**

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

**2 - REFERENCES**

EN2424	: Aerospace series - Marking of aerospace products.
EN4473	: Aluminium pigmented coatings.
EN6117	: Specification for lubrication of bolts with cetyl alcohol.
ABS1420	: Nut - Ordinary, for lightweight threaded pins.
ASNA2846	: Material – Equivalent, for fasteners.
AMS4928	: Titanium alloys bars, wire, forgings, and rings 6AL-4V annealed.
AMS6322	: Steel Bars, Forgings, and Rings (SAE 8740).
AMS4967	: Titanium alloys bars, wire, forgings, and rings 6AL-4V annealed, heat treatable.
AMS-QQ-P-416	: Plating, cadmium (electrodeposited)./
SAE AS8879	: Screw threads, controlled radius root with increased minor diameter.

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### 3 - TERMINOLOGY

Not applicable.

### 4 - REQUIRED CHARACTERISTICS

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

4.1.1 - Configuration shall be in accordance with the figure 1.

4.1.2 - Dimensions shall be in accordance with the figure 1 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 5.

4.1.5 – The washers given in table 3 (Code S) are 0,8mm thicker than the washers given in table 2.

4.1.6 – The washers given in table 4 (Code T) are 1,6mm thicker than the washers given in table 2.

#### 4.2 - Material, finish, lubrication

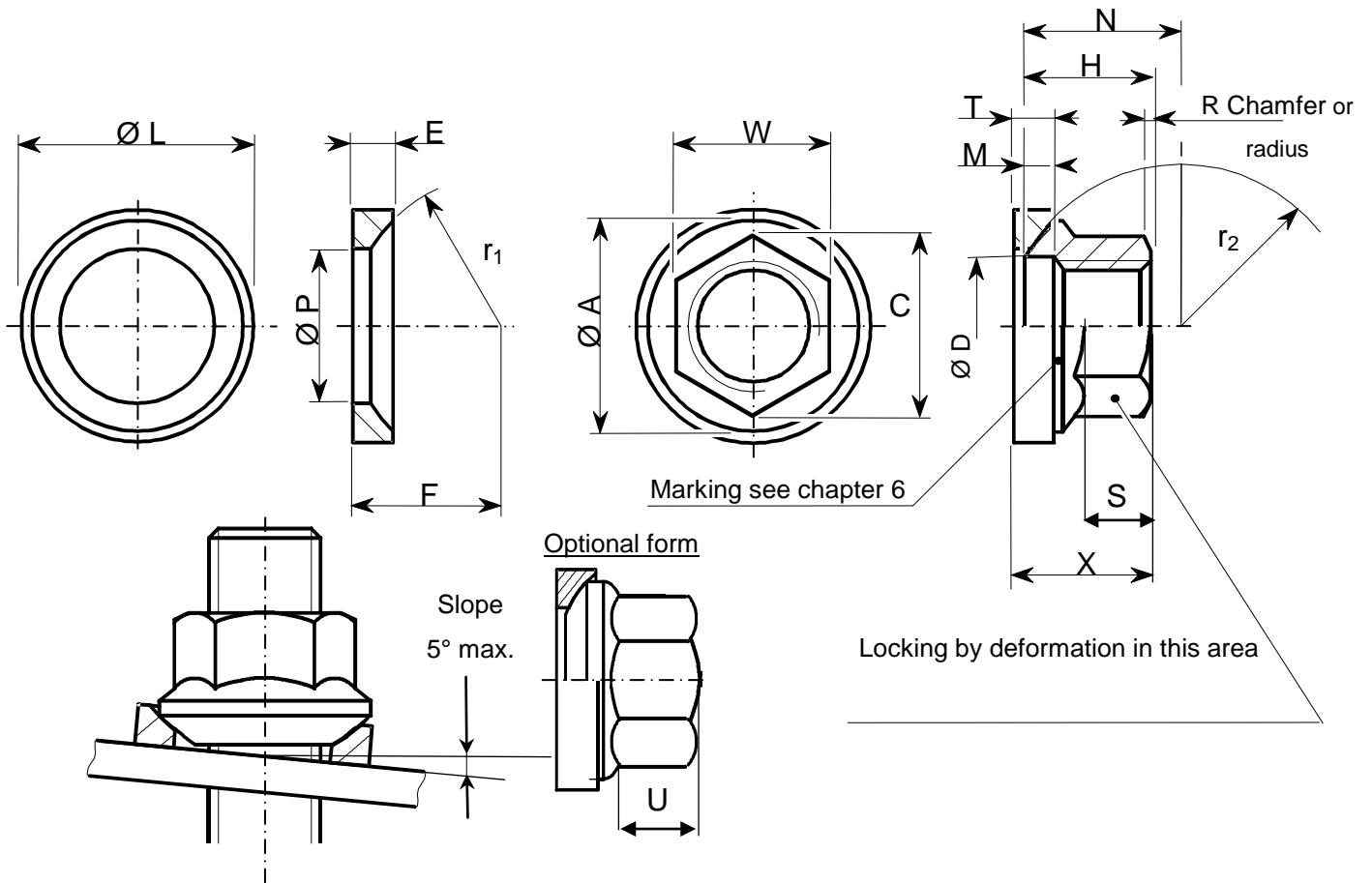
Material, finish and lubrication shall be in accordance with table 6.

#### 4.3 - General characteristics

4.3.1 - Max. Operating temperature: +235 °C.

4.3.2 - Surface conditions as per ASME B46-1

- Bearing surfaces (washer and nut spherical radius)  $\leq$  Ra 3,2 $\mu$ m
- Other surfaces  $\leq$  Ra 3,2 $\mu$ m



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

**Figure 1 - Configuration, dimensions**

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Table 1 – Nut dimensions and tolerances (continued)

Ø CODE No.	THREAD UNJF-3B as per SAE AS 8879	Ø A max.	C Ref.	Ø D min.	H Ref.	M Ref.	N Ref.	R
3	0.1900-32	7,85	7,24	5,66	4,83	1,35	3,48	0,10 0,30
3A	0.2160-28	9,00	8,30	6,15	5,50	1,35	4,30	
4	0.2500-28	10,10	9,07	7,19	5,41	1,12	4,70	
5	0.3125-24	12,65	10,90	8,74	6,27	0,91	5,84	
6	0.3750-24	15,45	14,58	10,31	7,54	1,24	7,14	0,20 0,85
7	0.4375-20	18,45	16,38	11,94	8,51	1,09	8,99	
8	0.5000-20	20,70	19,93	13,51	8,71	0,56	13,39	
9	0.5625-18	24,05	21,73	15,29	10,41	0,86	17,60	0,30 1,00
10	0.6250-18	26,05	23,87	16,87	11,71	0,76	16,94	
12	0.7500-16	31,10	25,40	22,10	14,60	2,50	18,60	
14	0.8750-14	38,10	30,80	26,30	19,50	3,00	21,00	0,50 1,20
16	1.0000-12	43,10	34,50	30,20	22,00	3,50	23,00	

Dimensions in mm.

**Table 1 – Nut dimensions and tolerances (concluded)**

Ø CODE No.	THREAD UNJF-3B as per SAE AS 8879	W		Washer r <sub>1</sub> +0,127 0	Nut r <sub>2</sub> 0 -0,127	S Min	U Min	Axial Tensile Strength min. (daN)
		Min	Max					
3	0.1900-32	6,17	6,37	4,80	4,80	2,06	2,06	1 240
3A	0.2160-28	6,88	7,19	5,50	5,50	2,46	2,46	1 700
4	0.2500-28	7,75	7,95	6,35	6,35	2,80	2,80	2 350
5	0.3125-24	9,32	9,55	7,95	7,95	3,00	3,00	3 600
6	0.3750-24	12,50	12,75	9,52	9,52	3,50	3,50	5 800
7	0.4375-20	14,05	14,32	11,55	11,55	4,00	4,00	7 600
8	0.5000-20	17,07	17,45	15,75	15,75	4,28	4,28	10 200
9	0.5625-18	18,67	19,05	20,00	20,00	4,86	4,86	12 900
10	0.6250-18	20,48	20,86	20,00	20,00	6,70	6,70	14 234
12	0.7500-16	21,90	22,30	21,90	21,90	6,35	6,35	20 865
14	0.8750-14	26,70	27,00	25,50	25,50	9,20	9,20	28 123
16	1.0000-12	29,90	30,20	28,10	28,10	10,52	10,52	38 101

Dimensions in mm

**Table 2 – Washer dimensions and tolerances (No code)**

Ø CODE No.	THREAD UNJF-3B as per SAE AS 8879	E ± 0,127	F Ref.	Ø L ± 0,127	Ø P Ref.	T Min.	X	
							Min	Max
3	0.1900-32	2,29	4,83	9,28	6,60	2,54	5,75	6,55
3A	0.2160-28	2,60	5,61	10,40	7,43	2,54	6,40	6,95
4	0.2500-28	2,90	6,35	11,89	8,59	2,64	6,65	7,36
5	0.3125-24	3,56	7,77	14,83	10,74	2,69	7,75	8,56
6	0.3750-24	3,94	8,79	18,50	12,60	2,74	8,75	9,55
7	0.4375-20	3,94	10,90	22,25	14,48	2,84	10,00	10,74
8	0.5000-20	4,50	15,85	25,83	16,61	2,90	10,75	11,55
9	0.5625-18	5,28	19,89	29,74	18,90	3,00	12,30	13,05
10	0.6250-18	5,49	19,33	31,75	21,21	3,00	13,70	14,45
12	0.7500-16	6,91	20,90	36,30	24,90	3,40	16,50	17,15
14	0.8750-14	8,48	23,50	46,00	31,00	3,70	21,60	22,25
16	1.0000-12	9,98	26,00	52,00	35,00	4,00	24,60	25,25

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**Table 3 – Washer dimensions and tolerances (Code S)**

Ø CODE No.	THREAD UNJF-3B as per SAE AS 8879	E ± 0,127	F Ref.	Ø L ± 0,127	Ø P Ref.	T Min.	X	
							Min	Max
3	0.1900-32	3,09	5,63	9,28	6,60	3,34	6,55	7,35
4	0.2500-28	3,70	7,15	11,89	8,59	3,34	7,45	8,16
3A	0.2160-28	3,40	6,41	10,40	7,43	3,44	7,20	7,75
5	0.3125-24	4,36	8,57	14,83	10,74	3,49	8,55	9,36
6	0.3750-24	4,74	9,59	18,50	12,60	3,54	9,55	10,35
7	0.4375-20	4,74	11,70	22,25	14,48	3,64	10,80	11,54
8	0.5000-20	5,30	16,65	25,83	16,61	3,70	11,55	12,35
9	0.5625-18	6,08	20,69	29,74	18,90	3,80	13,10	13,85
10	0.6250-18	6,29	20,13	31,75	21,21	3,80	14,50	15,25
12	0.7500-16	7,71	21,70	36,30	24,90	4,20	17,30	17,95
14	0.8750-14	9,28	24,30	46,00	31,00	4,50	22,40	23,05
16	1.0000-12	10,78	26,80	52,00	35,00	4,80	25,40	26,05

**Table 4 – Washer dimensions and tolerances (Code T)**

Ø CODE No.	THREAD UNJF-3B as per SAE AS 8879	E ± 0,127	F Ref.	Ø L ± 0,127	Ø P Ref.	T Min.	X	
							Min	Max
3	0.1900-32	3,89	6,43	9,28	6,60	4,14	7,35	8,15
3A	0.2160-28	4,20	7,21	10,40	7,43	4,14	8,00	8,55
4	0.2500-28	4,50	7,95	11,89	8,59	4,24	8,25	8,96
5	0.3125-24	5,16	9,37	14,83	10,74	4,29	9,35	10,16
6	0.3750-24	5,54	10,39	18,50	12,60	4,34	10,35	11,15
7	0.4375-20	5,54	12,50	22,25	14,48	4,44	11,60	12,34
8	0.5000-20	6,10	17,45	25,83	16,61	4,50	12,35	13,15
9	0.5625-18	6,88	21,49	29,74	18,90	4,60	13,90	14,65
10	0.6250-18	7,09	20,93	31,75	21,21	4,60	15,30	16,05
12	0.7500-16	8,51	22,50	36,30	24,90	5,00	18,10	18,75
14	0.8750-14	10,08	25,10	46,00	31,00	5,30	23,20	23,85
16	1.0000-12	11,58	27,60	52,00	35,00	5,60	26,20	26,85

**Table 5 : Mass (Grams)**

Ø CODE No.	Nut and Washer Assembly (Washer No code)	Nut and Washer assembly (Washer code S)	Nut and Washer assembly (Washer code T)
3	1,30	1,46	1,62
3A	1,90	2,16	2,42
4	2,40	2,73	3,06
5	4,30	4,82	5,34
6	7,70	8,61	9,52
7	13,20	14,61	16,02
8	20,70	22,63	24,56
9	29,20	31,80	34,40
10	31,30	34,06	36,82
12	56,80	60,24	63,68
14	104,40	110,10	115,80
16	153,50	160,79	168,08

**Table 6 - Material, finish, lubrication**

Code	Element <sup>(1)</sup>	Material	Finish	Lubrication
-	NUT	Alloy steel 8740 as per AMS6322 or equivalent as per ASNA2846 Hardness Rc=39-43 HRC	Cadmium plating as per AMS-QQ-P-416 type II, class 2	Cetyl alcohol as per EN6117
	WASHER			

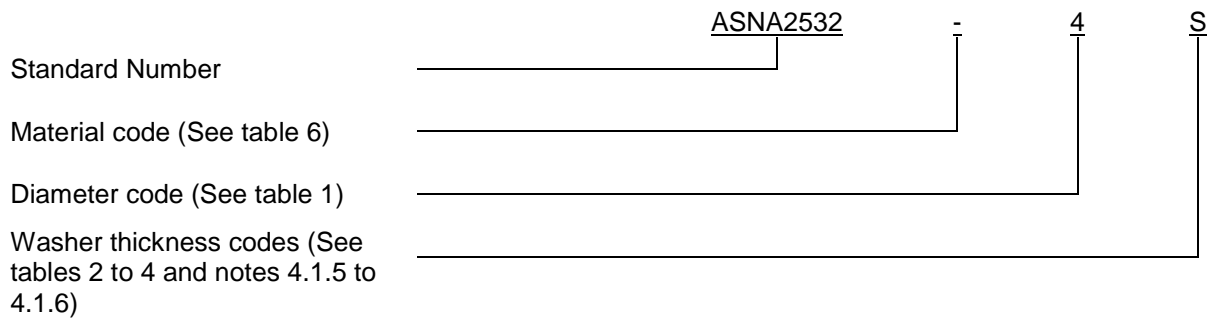
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## 5 - DESIGNATION

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



**Components (nut and washer) shall not be shipped, stored or used separately.**

## 6 - MARKING

Parts shall be marked as per EN 2424, style F.

As alternatives to the figure 1 (page 3), marking can be tolerated on the hexagon (locking mark) or on the flanged area.

Code S and Code T washers shall be identified with the letter S or T on the outside diameter of the washer also the washers shall be identified with paint identification.

Code S washers shall have a small dab/stripe of Yellow paint (FED Standard 595 colour No 13655 or similar).

Code T washers shall have a small dab/ stripe of Green paint (FED Standard 595 colour No 14115 or similar).

## 7 - TECHNICAL SPECIFICATION

ABS1420.

## 8 - MANUFACTURERS

Refer to the list of qualified manufacturers and products.



## AMENDMENT RECORD SHEET

Issue	Modified paragraph	Modification summary	Justification
A.06.88	Table 1	New standard.	Following note EG/ST437.1 27/88 Annex 4 A320
B.10.88		Chamfer added in figure. Values of dimensions W and T modified.	
C.04.89		Knurling for identification of item code No. 10 added. Dimensions A, C, Ø D, F, H, r, T and X modified in table. Identification columns added in table.	
D.04.91		In table 1 : mass in kg/100 changed to mass in kg/1 000.	
E.11.91		Amended standard.	Following note No. 216.338/90 of A.DP.SM.MA PMS8592 A 320 Mod. 21407
F.01.99		Standard amended. Ø code No. 12 added.	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 : 19,05/18,59 mm changed to 20,86/20,48 mm.	Note 564.2323/99 JLM No. 0440293/99
H.01.01		Dash No. 12 : diameter D : 19,94 mm changed to 22,14 mm.	In accordance with repair bolt R2
J.02.02		Standard fully amended. Diameter code Nos 14 and 16 added.	A 380
K.07.02		Diameter code No. 3A added.	A 380
L.09.08		ASNA2845 changed to ABS1420. AMS4928 and AMS4967 added. MIL-S-6049 changed to AMS6322. MIL-S-8879 changed to SAE AS8879. EN4473 added.	A380
	Chapt. 2, 4, 6 and 7	Requirement "go thread penetration" in ch. 4.3.1 deleted.	
	Table 1 and 2	Requirements for surface conditions added, ch. 4.3..2. Dimension H, tolerance changed to ref. dimension. Chamfer replaced by chamfer or radius R. Chamfer / radius R specified. Tolerance for spherical radius of washer r <sub>1</sub> and nut r <sub>2</sub> defined. Optional form U for machined nuts added.	

**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
		Dimension S min changed. Tolerance for dimension X defined. Diameter A max. Increased. Diameter D, tolerance changed to min. diameter tolerance. Diameter L increased for dia. -3, -6. Mass for titanium added. Material code T added. Notes 1 and 2 added. Marking for code T added.	
M.10.08	Figure 1 Document	Drawing modified. Editorial revision	A380
N 06.13		Material code T removed from the standard as this material was not developed. Tables 2, 3, 4 and 5 added to incorporate new washer thickness 0,8 and 1,6mm, part marking updated to reflect the new additional washer thicknesses.	A350
P 10.13	Tables 1 and 2	Titanium nut inactive for new design (all diameter) Dimension "T" Min. defined for washer code S and T.	A350

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