BS EN 2811:2016

BSI Standards Publication

Aerospace series — Nuts, hexagon, slotted/castellated in steel cadmium plated — Classification: 1 100 MPa/235 °C

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National foreword

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A list of organizations represented on this committee can be obtained on request to its secretary.

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Luft- und Raumfahrt - Flache Kronenmuttern aus Stahl, verkadmet - Klasse: 1 100 MPa/235 °C

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European foreword

This document (EN 2811:2016) has been prepared by the Aerospace and Defence Industries Association of Europe - Standardization (ASD-STAN).

After enquiries and votes carried out in accordance with the rules of this Association, this Standard has received the approval of the National Associations and the Official Services of the member countries of ASD, prior to its presentation to CEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2017, and conflicting national standards shall be withdrawn at the latest by June 2017.

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1 Scope

This European Standard specifies the characteristics of steel, cadmium plated hexagonal nuts, with an upper portion slotted or castellated normal height, normal across flats.

These nuts are intended for use in aircraft assemblies subjected principally to shear loading.

They are intended to be used with threaded parts of 1 100 MPa [1)] tensile strength classification and split pins to EN 2367.

The cadmium plating restricts the application to temperatures not exceeding 235 °C.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 2133, *Aerospace series — Cadmium plating of steels with specified tensile strength ≤ 1 450 MPa, copper, copper alloys and nickel alloys*

EN 2205, *Aerospace series — Steel FE-PL 1502 (25CrMo4) — 900 MPa ≤ R_m ≤1 100 MPa — Bars — D_e ≤40 mm*

EN 2367, *Aerospace series — Split pins in steel EN 2573*

EN 2424, *Aerospace series — Marking of aerospace products*

EN 2438, *Aerospace series — Steel FE-PL2102 (35NiCr6) — 900 MPa ≤ R_m ≤ 1 100 MPa — Bars — D_e ≤40 mm*

EN 2444, *Steel FE-PL 711 — 900 MPa ≤ R_m ≤ 1 100 MPa — Bars and wires D_e ≤ 45 mm — Aerospace series* [2)]

EN 2448, *Aerospace series — Steel FE-PL1503 (35CrMo4) — 900 MPa ≤ R_m ≤ 1 100 MPa — Bars — D_e ≤ 40 mm*

EN 9100, *Aerospace series — Quality Management Systems — Requirements for Aviation, Space and Defence Organizations*

EN 9133, *Aerospace series — Quality Management Systems — Qualification Procedure for Aerospace Standard Products*

ISO 7313, *Aircraft — High temperature convoluted hose assemblies in polytetrafluoroethylene (PTFE)*

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1) This strength level applies at ambient temperature.

2) Published as ASD-STAN Standard at the date of publication of this standard by AeroSpace and Defence industries Association of Europe - Standardization (ASD-STAN) (www.asd-stan.org)

ISO 4147, *Aerospace — Nuts, hexagonal, slotted (castellated), normal height, normal across flats, with MJ threads, classifications: 600 MPa (at ambient temperature)/120 degrees C, 600 MPa (at ambient temperature)/235 degrees C, 900 MPa (at ambient temperature)/425 degrees C, 1 100 MPa (at ambient temperature)/235 degrees C, 1 100 MPa (at ambient temperature)/315 degrees C, 1 100 MPa (at ambient temperature)/650 degrees C, 1 210 MPa (at ambient temperature)/730 degrees C, 1 250 MPa (at ambient temperature)/235 degrees C and 1 550 MPa (at ambient temperature)/600 degrees C — Dimensions*

ISO 5855-1, *Aerospace — MJ threads — Part 1: General requirements*

ISO 5855-2, *Aerospace — MJ threads — Part 2: Limit dimensions for bolts and nuts*

ISO 8788, *Aerospace — Nuts, metric — Tolerances of form and position*

ISO 9139, *Aerospace — Nuts, plain or slotted (castellated) — Procurement specification*

3 Required characteristics

3.1 Configuration – Dimensions – Masses

Configuration shall be in accordance to the Figure 1 the dimensions [3)] and tolerances shall conform to the Figure 1 and Table 1 and are applicable after cadmium plating. Tolerances of form and position are in conformity with ISO 8788.

3.2 Surface roughness

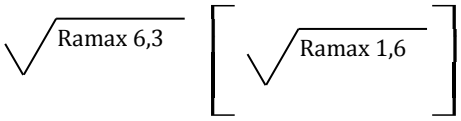
See Figure 1. The values apply prior to cadmium plating. They do not apply to the thread where the surface roughness will be as achieved by normal methods of manufacture.

3.3 Materials

Steel EN 2205 or EN 2438 or EN 2444 or EN 2448.

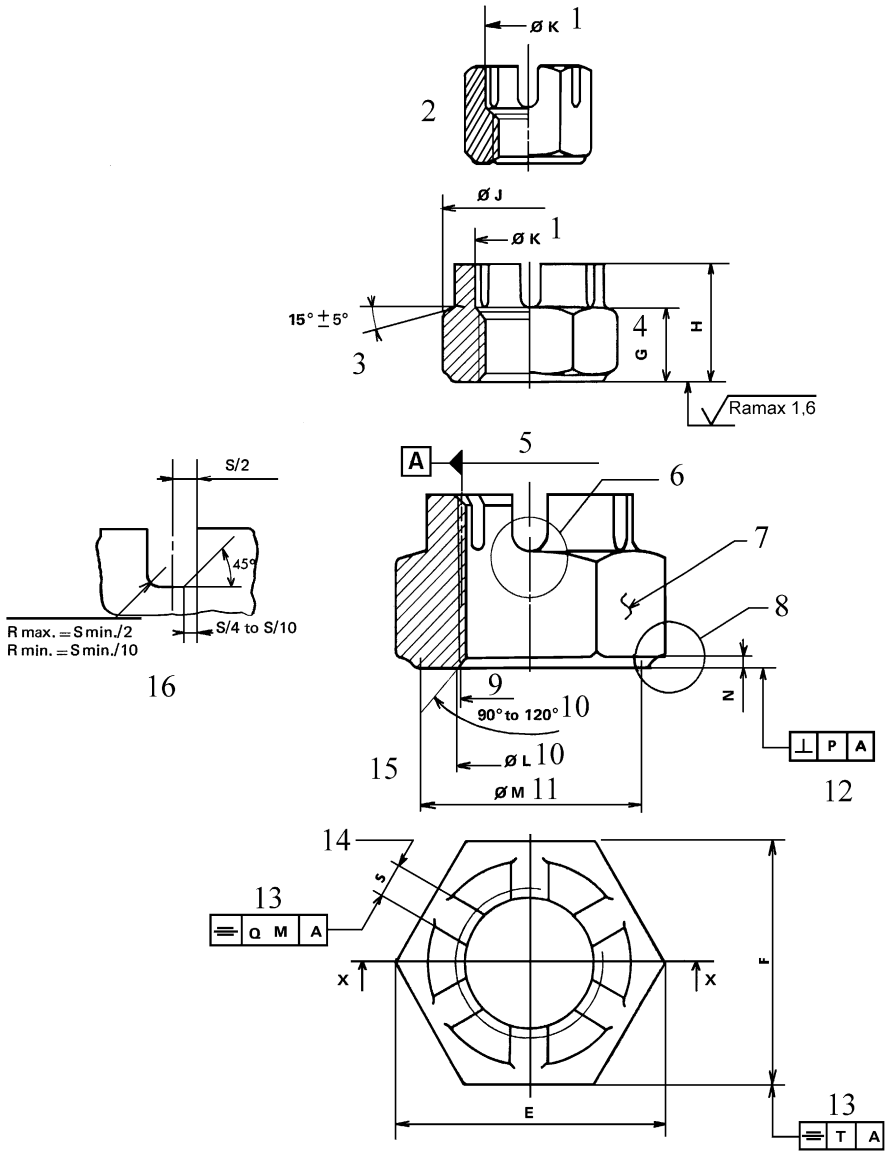
3.4 Surface treatment

Cadmium plating EN 2133, 5 μm minimum on the threads on all areas which can be contacted by a 20 mm diameter ball. On all other areas, a continuous deposit shall be present but no minimum value is specified.



Break sharp edges 0,1 mm to 0,4 mm.

3) Conform to ISO 4147.



Key

1 Tooling marks are permissible in this areas
2 Half section XX: form for diameter code 040, 050
3 Half section XX: form for diameter code 060, 070
4 Dimension *G* applies to:
- height below slots (diameter codes 040 to 200)
- height of flats (diameter codes 060 to 200)
- bottom of counterbore (diameter codes 040 to 070)

5 Pitch diameter
6 See detail Y
7 Part marking in this zone
8 Form of contour within limiting dimensions at manufacturer's option
9 Thread
10 This dimension also applies to the upper chamfer. All forms of entry (chamfer or radius) optional within these limiting dimensions
11 Diameter *M* may be tangential to, but shall not intrude on the flats
12 Bearing surface may be flat to concave, but shall not be convex
13 Three (3) places
14 Six (6) slots
15 Half section XX: form for diameter code 080, 200
16 Detail Y: Form (radius or chamfer) at bottom of slot at manufacturer's option

Figure 1

Table 1 — Dimensions and mass

Dimensions in millimetres

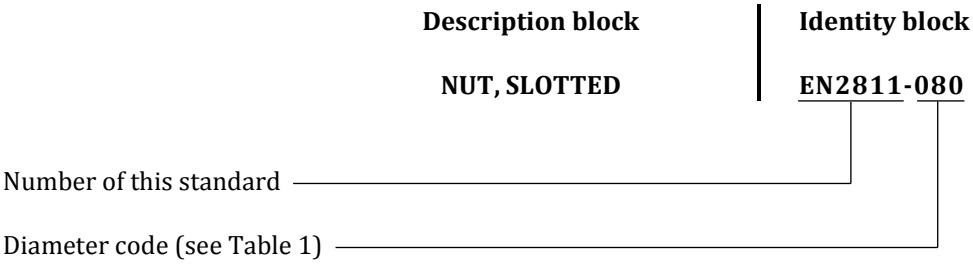
Diameter code	Thread [a]	*E*	*F*		*G*	*H*	*J*	*K*
		min.	Nom.	Tol.	± 0,25	± 0,25	± 0,25	H15
040	MJ 4 x 0,7 – 4H6H	7,6	7	h12	3,0	5	–	4
050	MJ 5 x 0,8 – 4H6H	8,7	8		3,75	6,2	–	5
060	MJ 6 x 1 – 4H5H	10,9	10	h13	4,5	6,9	9	6
070	MJ 7 x 1 – 4H5H	12,0	11		5,25	8,1	10	7
080	MJ 8 x 1 – 4H5H	14,3	13		6,0	8,8	11	–
100	MJ10 x 1,25 – 4H5H	18,9	17		7,5	11,1	13	–
120	MJ12 x 1,25 – 4H5H	21,1	19		9,0	12,6	16	–
140	MJ14 x 1,5 – 4H5H	24,5	22		10,5	14,9	18	–
160	MJ16 x 1,5 – 4H5H	26,8	24		12,0	16,4	22	–
180	MJ18 x 1,5 – 4H5H	30,2	27		13,5	18,7	25	–
200	MJ20 x 1,5 – 4H5H	33,6	30		15,0	20,2	28	–

[a] In conformity with ISO 5855 - Parts 1 and 2.

L		*M*	*N*	*P*	*Q*	*S*	*T*	Mass kg/ 1 000 pieces max.	max. diameter of split pin. Reference
max.	min.	min.	0 – 0,3			H14			
4,8	4,2	6,4	0,5	0,10	0,2	1,3	0,3	1,3	1,0
5,8	5,2	7,4	0,5	0,10	0,2	1,7		1,8	1,4
7,1	6,3	9,3	0,5	0,10	0,2	1,7		2,8	1,4
8,1	7,3	10,2	0,5	0,10	0,2	2,1	0,36	3,8	1,8
9,1	8,3	12,2	0,5	0,10	0,2	2,1		5,6	1,8
11,1	10,3	16,0	0,6	0,13	0,25	2,6		11,5	2,3
13,1	12,3	18,0	0,6	0,13	0,25	2,6	0,43	16	2,3
15,2	14,4	21,0	0,6	0,15	0,25	3,2		24,5	2,9
17,2	16,4	23,0	0,6	0,18	0,3	3,2		33,5	2,9
19,2	18,4	26,0	0,6	0,18	0,3	4,0		48,5	3,7
21,2	20,4	29,0	0,6	0,18	0,3	4,0	0,52	66	3,7

4 Designation

EXAMPLE



NOTE If necessary, the code I9005 shall be placed between the description block and the identity block.

5 Marking

Each nut shall be marked in any of the positions shown in the figure in accordance with the marking styles given in Table 2 and defined by EN 2424.

Table 2 — Marking styles

Diameter code	Marking styles
040	F
050 to 080	E
100 and 120	D
140 and 160	C
180 and 200	A

6 Technical specification

ISO 9139 except for:

— Approval of manufacturers: see EN 9100;

— Qualification of products: see EN 9133.

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