

# INTERNATIONAL STANDARD

# ISO 8538

Second edition  
1999-02-01

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## **Aerospace — Nuts, hexagonal, self-locking, with counterbore and captive washer, with MJ threads, classifications: 1 100 MPa (at ambient temperature)/235 °C, 1 100 MPa (at ambient temperature)/315 °C and 1 100 MPa (at ambient temperature)/425 °C — Dimensions**

*Aéronautique et espace — Écrous hexagonaux, à freinage interne, avec  
chambrage et rondelle captive, à filetage MJ, classifications: 1 100 MPa  
(à température ambiante)/235 °C, 1 100 MPa (à température  
ambiante)/315 °C et 1 100 MPa (à température ambiante)/425 °C —  
Dimensions*

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Reference number  
ISO 8538:1999(E)

**ISO 8538:1999(E)****Foreword**

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 8538 was prepared by Technical Committee ISO/TC 20, *Aircraft and space vehicles*, Subcommittee SC 4, *Aerospace fastener systems*.

This second edition cancels and replaces the first edition (ISO 8538:1986), which has been technically revised.

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## Introduction

The dimensions specified in this International Standard have been determined to allow production of a part which will satisfy the requirements of the procurement specification ISO 5858.

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# Aerospace — Nuts, hexagonal, self-locking, with counterbore and captive washer, with MJ threads, classifications: 1 100 MPa (at ambient temperature)/235 °C, 1 100 MPa (at ambient temperature)/315 °C and 1 100 MPa (at ambient temperature)/425 °C — Dimensions

## 1 Scope

This International Standard specifies the dimensions of self-locking hexagonal nuts, with counterbore and captive washer, with MJ threads, of classifications: 1 100 MPa<sup>1)</sup>/235 °C<sup>2)</sup>, 1 100 MPa<sup>1)</sup>/315 °C<sup>2)</sup>, 1 100 MPa<sup>1)</sup>/425 °C<sup>2)</sup>.

This International Standard is only applicable for the compilation of aerospace product standards.

## 2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 5855-2:1988, *Aerospace — MJ threads — Part 2: Limit dimensions for bolts and nuts.*

ISO 5858:1991, *Aerospace — Self-locking nuts with maximum operating temperature less than or equal to 425 °C — Procurement specification.*

ISO 8788:1987, *Aerospace — Fasteners — Tolerances of form and position for nuts.*

## 3 Configuration and dimensions

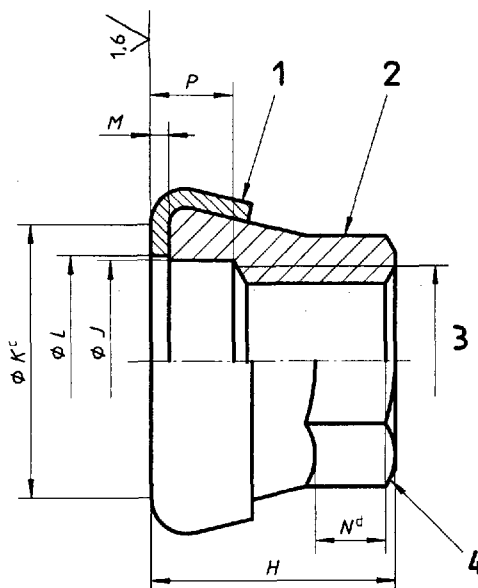
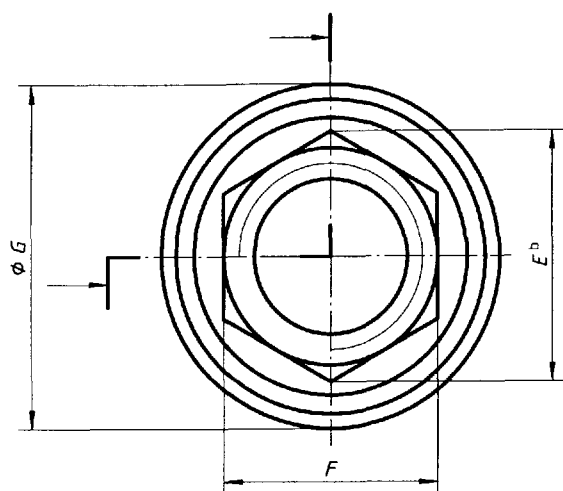
See Figure 1 and Table 1. Dimensions and tolerances are in millimetres. They apply after any surface coating(s) but before the application of any lubricant.

<sup>1)</sup> Corresponds to the minimum tensile stress which the nut is able to withstand at ambient temperature without breaking or cracking when tested with a bolt of a higher strength class.

<sup>2)</sup> Maximum temperature that the nut is able to withstand, without permanent alteration to its original characteristics, after ambient temperature has been restored. The maximum temperature is conditioned by the material or by the surface treatment.

6,3 / (1,6)<sup>a</sup>

Remove sharp edges 0,1 to 0,4



**Key**

- 1 Washer shall be free to rotate on the nut.
- 2 Form out-of-round in this area to achieve the self-locking torque requirement (tooling marks permissible in this area).
- 3 Thread
- 4 Chamfer, radius or broken edge

Tolerances of form and position shall conform to those specified in ISO 8788. Details of form not stated are at the manufacturer's discretion.

- a These values, in micrometres, apply before any surface coating(s) is (are) applied. The values do not apply to threads and shear edges the surface texture of which will be as achieved by the usual manufacturing methods.
- b Applies before forming out-of-round, but finished nuts shall fit a standard socket wrench.
- c Bearing surface diameter of the washer
- d Wrench pad engagement

**Figure 1**

**Table 1**

Diameter code	Thread <sup>a</sup>	E		F		G	H	J	K	L	M	N	P
		min.	nom.	tol.	max.	max.	min.	min.	max.	min.	min.	min.	
030	MJ3 × 0,5 – 4H6H	4,2	4	h12	6,7	4,6	3,4	5,2	3,8	0,4	1,2	1,6	
040	MJ4 × 0,7 – 4H6H	5,3	5		8,4	6,2	4,4	6,4	4,8		1,5	2,2	
050	MJ5 × 0,8 – 4H6H	6,5	6		9,6	7,4	5,5	7,6	5,8	0,6	2	2,4	
060	MJ6 × 1 – 4H5H	7,6	7		11,1	8,1	6,5	9	6,8		2,3	2,7	
070	MJ7 × 1 – 4H5H	8,7	8	13,3	9	7,5	11	8	2,7				
080	MJ8 × 1 – 4H5H	10,9	10	14,6	9,9	8,5	12	9	3,2		3		
100	MJ10 × 1,25 – 4H5H	13,2	12	h13	17,2	12	10,5	14,7	11	3,8			
120	MJ12 × 1,25 – 4H5H	15,5	14		21	13,8	12,5	18,5	13	4,5			

<sup>a</sup> In accordance with ISO 5855-2. In the self-locking zone, the tolerances apply before forming out-of-round.

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**ICS 49.030.30**

**Descriptors:** aircraft industry, fasteners, MJ threads, nuts (fasteners), hexagonal nuts, counterbore nuts, self-locking nuts, classification, form specifications, dimensions.

Price based on 2 pages

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