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**Aerospace — Nuts, spline-drive, self-locking, with MJ threads, classifications:  
1 100 MPa (at ambient temperature)/425 °C,  
1 100 MPa (at ambient temperature)/650 °C,  
1 210 MPa (at ambient temperature)/425 °C,  
1 210 MPa (at ambient temperature)/730 °C,  
1 550 MPa (at ambient temperature)/235 °C,  
1 550 MPa (at ambient temperature)/425 °C  
and 1 550 MPa (at ambient temperature)/  
600 °C — Dimensions**

*Aéronautique et espace — Écrous cannelés à freinage interne, à filetage MJ, classifications: 1 100 MPa (à température ambiante)/425 °C, 1 100 MPa (à température ambiante)/650 °C, 1 210 MPa (à température ambiante)/425 °C, 1 210 MPa (à température ambiante)/730 °C, 1 550 MPa (à température ambiante)/235 °C, 1 550 MPa (à température ambiante)/425 °C et 1 550 MPa (à température ambiante)/600 °C — Dimensions*



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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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

The main task of technical committees is to prepare International Standards. 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.

Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 9157 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 9157:1988), 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 or ISO 8641, depending on the classification of the nut.

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# Aerospace — Nuts, spline-drive, self-locking, with MJ threads, classifications: 1 100 MPa (at ambient temperature)/425 °C, 1 100 MPa (at ambient temperature)/650 °C, 1 210 MPa (at ambient temperature)/425 °C, 1 210 MPa (at ambient temperature)/730 °C, 1 550 MPa (at ambient temperature)/235 °C, 1 550 MPa (at ambient temperature)/425 °C and 1 550 MPa (at ambient temperature)/600 °C — Dimensions

## 1 Scope

This International Standard specifies the dimensions of spline-drive nuts, with MJ threads and a self-locking feature achieved by forming the upper portion out-of-round, for classifications: 1 100 MPa<sup>1)</sup>/425 °C<sup>2)</sup>, 1 100 MPa<sup>1)</sup>/650 °C<sup>2)</sup>, 1 210 MPa<sup>1)</sup>/425 °C<sup>2)</sup>, 1 210 MPa<sup>1)</sup>/730 °C<sup>2)</sup>, 1 550 MPa<sup>1)</sup>/235 °C<sup>2)</sup>, 1 550 MPa<sup>1)</sup>/425 °C<sup>2)</sup> and 1 550 MPa<sup>1)</sup>/600 °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 5855-2:1999, *Aerospace — MJ threads — Part 2: Limit dimensions for bolts and nuts*

ISO 7403:1998, *Aerospace — Spline drives — Wrenching configuration — Metric series*

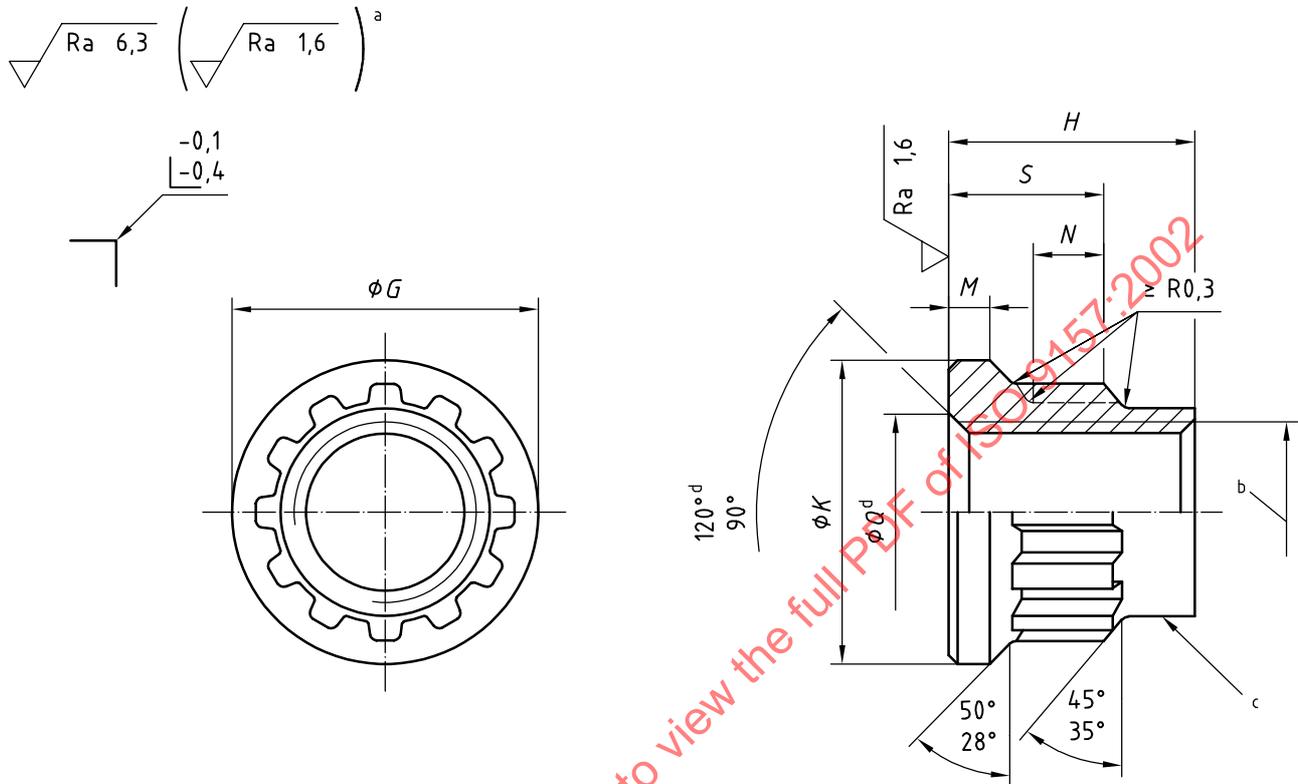
ISO 8788:2000, *Aerospace — Nuts, metric — Tolerances of form and position*

1) 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.

2) 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 sealing ring material or by the surface treatment.

### 3 Configuration and dimensions

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



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

- <sup>a</sup> These values, in micrometres, apply before any surface coating(s) is(are) applied. The values do not apply to threads the surface texture of which will be as achieved by the usual manufacturing methods.
- <sup>b</sup> Thread
- <sup>c</sup> Form out-of-round in this area to achieve the self-locking requirement. Tooling marks permissible in this area.
- <sup>d</sup> All forms of entry (radius or chamfer) permissible within the limiting dimensions

Figure 1

Table 1

Diameter code	Thread <sup>a</sup>	<i>G</i>	<i>H</i>	<i>K</i>	<i>M</i>	<i>N</i>	<i>Q</i>		<i>S</i>	Wrenching dash number <sup>b</sup>
		max.	max.	min.			min.	max.		
040	MJ4 × 0,7-4H6H	7,4	5,6	6,7	1,2	1,8	4,8	4,2	4,2	060
050	MJ5 × 0,8-4H6H	9,1	7	8,3		2	5,8	5,2	4,9	070
060	MJ6 × 1-4H5H	10,6	8,1	9,8		2,3	7,1	6,3	5,5	080
070	MJ7 × 1-4H5H	12,1	9,1	11,3		2,6	8,1	7,3	6,1	090
080	MJ8 × 1-4H5H	13,6	10,4	12,8		2,8	9,1	8,3	6,7	100
100	MJ10 × 1,25-4H5H	16,8	13	15,8		3,1	11,1	10,3	8,1	120
120	MJ12 × 1,25-4H5H	19,9	15	18,8	1,4	3,5	13,1	12,3	9,5	140
140	MJ14 × 1,5-4H5H	23	17,5	21,9	1,7	4	15,2	14,4	10,7	170
160	MJ16 × 1,5-4H5H	26	20	24,9	1,9	4,7	17,2	16,4	12,3	190
180	MJ18 × 1,5-4H5H	29,1	22,5	28	2,1	5,6	19,2	18,4	13,7	220
200	MJ20 × 1,5-4H5H	32,3	25	31,2	2,3	6,8	21,2	20,4	15,8	240
220	MJ22 × 1,5-4H5H	35,4	27,5	34,3	2,5	8,3	23,2	22,4	17,6	270
240	MJ24 × 2-4H5H	38	30	36,9	2,7	10,1	25,3	24,5	19,4	300

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

<sup>b</sup> In conformity with ISO 7403 over *N* min.

## Bibliography

- [1] ISO 5858:1999, *Aerospace — Nuts, self-locking, with maximum operating temperature less than or equal to 425 °C — Procurement specification*
- [2] ISO 8641:1987, *Aerospace — Self-locking nuts with maximum operating temperature greater than 425 °C — Procurement specification*
- [3] ISO 13715:2000, *Technical drawings — Edges of undefined shape — Vocabulary and indications*

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