

**Nuts, anchor,
self-locking, fixed, 90°
corner, with
counterbore, 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**

ICS 49.030.30

National foreword

This British Standard reproduces verbatim ISO 3221:1998 and implements it as the UK national standard.

The UK participation in its preparation was entrusted by Technical Committee ACE/12, Aerospace fasteners and fastening systems, to Subcommittee ACE/12/1, Aerospace fasteners and fastening systems (International), which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

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

Cross-references

The British Standards which implement international or European publications referred to in this document may be found in the BSI Standards Catalogue under the section entitled “International Standards Correspondence Index”, or by using the “Find” facility of the BSI Standards Electronic Catalogue.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the ISO title page, page ii, pages 1 to 3 and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

Amendments issued since publication

| Amd. No. | Date | Comments |
|----------|------|----------|
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This British Standard, having been prepared under the direction of the Engineering Sector Committee, was published under the authority of the Standards Committee and comes into effect on 15 February 1999

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INTERNATIONAL
STANDARD

ISO
3221

Second edition
1998-11-15

**Aerospace — Nuts, anchor, self-locking,
fixed, 90° corner, with counterbore, 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 à river, à freinage interne, fixes,
d'angle 90°, avec chambrage, 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*



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.

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 3221 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 3221:1989), which has been technically revised.

Descriptors: Aircraft industry, fasteners, MJ threads, nuts (fasteners), anchor nuts, self-locking nuts, counterbore nuts, classification, form specifications, dimensions.

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.

1 Scope

This International Standard specifies the dimensions of self-locking, fixed, 90° corner anchor nuts, with counterbore, with MJ threads, of classifications: 1 100 MPa ¹⁾/235 °C ²⁾, 1 100 MPa ¹⁾/315 °C ²⁾ and 1 100 MPa ¹⁾/425 °C ²⁾.

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 expressed in millimetres. They apply after any surface coating(s) but before the application of any lubricant.

The metallic cap (optional) shall remain joined to the nut at the maximum operating temperature (type of attachment at the user's discretion).

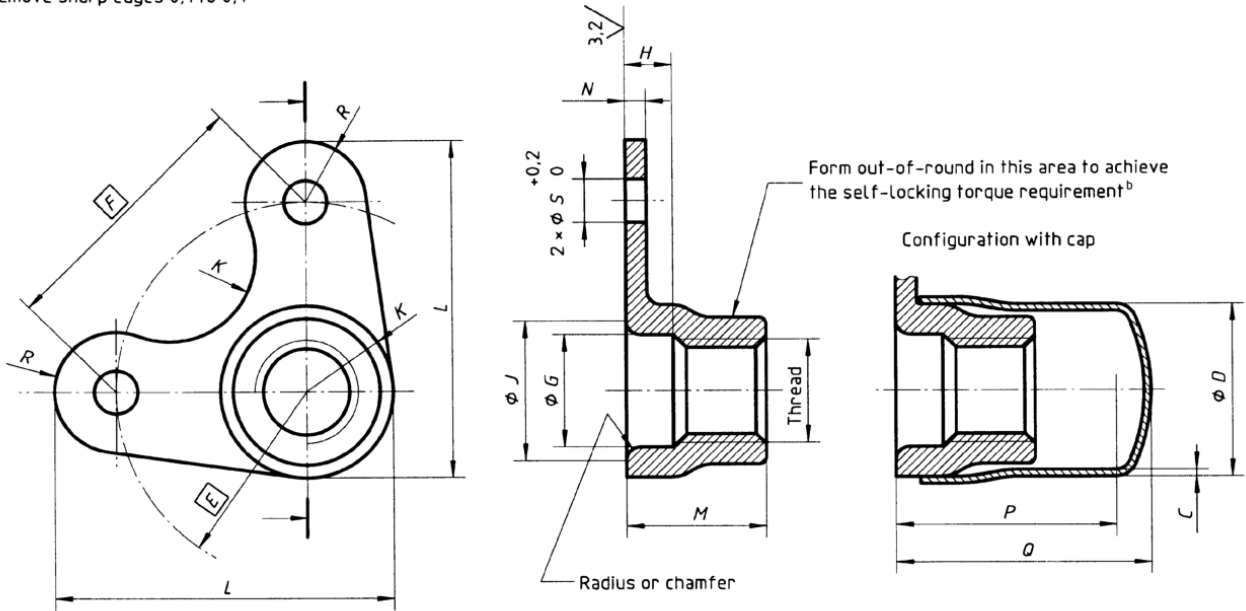
See ISO 5858 for the test conditions.

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.

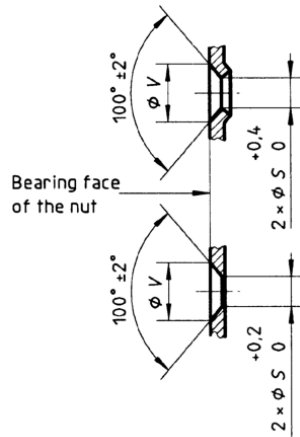
²⁾ Maximum temperature that the nut is able to withstand, without permanent alteration to its original characteristics, after ambient temperature has been restored. The maximum temperature is conditioned by the surface treatment.

$6.3 / (3.2)^a$

Remove sharp edges 0,1 to 0,4



Alternatives: countersunk rivet holes (when specified by purchaser) may be dimpled or cut countersunk (at manufacturer's option)



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

^aThese values, in micrometres, apply before any surface coating(s) is (are) applied. The values do not apply to threads, punched holes or shear edges the surface texture of which will be as achieved by the usual manufacturing methods.

^bTooling marks permissible in this area

Figure 1

Table 1

| Diameter code | Thread ^a | <i>C</i> | <i>D</i> | <i>E</i> | <i>F</i> | <i>G</i> | <i>H</i> | <i>j</i> ^b | <i>K</i> | <i>L</i> | <i>M</i> | <i>N</i> | <i>p</i> ^c | <i>Q</i> | <i>R</i> | <i>S</i> | <i>V</i> |
|---------------|---------------------|----------|----------|----------|----------|----------|----------|-----------------------|----------|----------|----------|----------|-----------------------|----------|----------|----------|----------|
| | | max. | max. | | | min. | min. | max. | max. | max. | max. | max. | max. | max. | max. | ≈ | |
| 030 | MJ3 × 0,5-4H6H | — | — | 6 | 8,5 | — | — | 4,6 | 3 | 11,7 | 3,2 | 1 | — | — | 2,5 | 2,5 | 4,8 |
| 040 | MJ4 × 0,7-4H6H | 0,4 | 6,6 | 8,5 | 12 | 4,4 | 2,2 | 6,2 | 4 | 15,7 | 5,8 | | 11 | 13 | 3 | | |
| 050 | MJ5 × 0,8-4H6H | | 8,1 | 9,5 | 13,4 | 5,5 | 2,4 | 7,3 | 4,5 | 17,2 | 6,9 | | 11,4 | 13,4 | | | |
| 060 | MJ6 × 1-4H5H | 0,5 | 9,2 | 11 | 15,6 | 6,5 | 2,7 | 8,7 | 5 | 19,7 | 8,1 | 1,2 | 12,7 | 14,7 | 3,5 | 3 | 5,7 |
| 080 | MJ8 × 1-4H5H | | 12,8 | | | 8,5 | | 10,9 | 6,5 | 21,2 | 9,9 | 1,5 | 15 | 18 | | | |
| 100 | MJ10 × 1,25-4H5H | | 15 | 13 | 18,4 | 10,5 | 3 | 12,9 | 8,1 | 25,8 | 12 | 1,6 | 20,2 | 22 | 4,5 | 3,5 | 6,6 |

^a In accordance with ISO 5855-2. In the self-locking zone, the tolerances apply before forming out-of-round.
^b Measured at sharp corners (chamfered) or point of tangency (radiused)
^c Maximum protrusion of the bolt

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