INTERNATIONAL STANDARD

**ISO 12126**

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# Prevailing torque type all-metal hexagon nuts with flange with metric fine pitch thread — Product grades A and B

*Écrous hexagonaux à embase, autofreinés, tout métal, à filetage métrique à pas fin — Grades A et B*



Reference number
ISO 12126:1997(E)

## 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.

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 12126 was prepared by Technical Committee ISO/TC 2, *Fasteners*, Subcommittee SC 1, *Mechanical properties of fasteners*.

Annex A forms an integral part of this International Standard.





International Organization for Standardization
Case postale 56 • CH-1211 Genève 20 • Switzerland
Internet central@iso.ch
X.400 c=ch; a=400net; p=iso; o=isocs; s=central

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# Prevailing torque type all metal hexagon nuts with flange with metric fine pitch thread — Product grades A and B

## 1 Scope

This International Standard specifies the characteristics of prevailing torque type all metal hexagon nuts with flange and metric fine pitch thread with nominal thread diameters $d$ from 8 mm up to and including 20 mm, in product grade A for sizes $d \leqslant 16$ mm and product grade B for sizes $d > 16$ mm, and with property classes 6, 8 and 10.

If other specifications are required, they should be selected from existing International Standards, for example ISO 261, ISO 965-2, ISO 2320 and ISO 4759-1.

## 2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 225:1983, *Fasteners – Bolts, screws, studs and nuts – Symbols and designations of dimensions.*

ISO 261:–[1], *ISO general purpose metric screw threads – General plan.*

ISO 965-2:–[2], *ISO general purpose metric screw threads – Tolerances – Part 2: Limits of sizes for general purpose bolt and nut threads – Medium quality.*

ISO 2320:1997, *Prevailing torque type steel hexagon nuts – Mechanical and performance properties.*

ISO 3269:1988, *Fasteners – Acceptance inspection.*

ISO 4042:–[3], *Fasteners – Electroplated coatings.*

ISO 4759-1:–[4], *Tolerances for fasteners – Part 1: Bolts, screws, studs and nuts – Product grades A, B and C.*

ISO 6157-2:1995, *Fasteners – Surface discontinuities – Part 2: Nuts.*

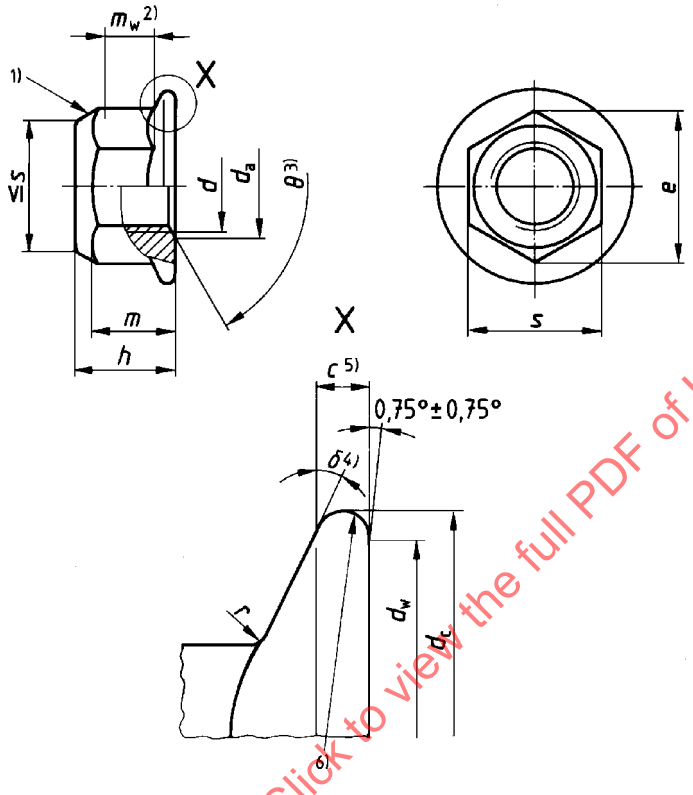
ISO 8992:1986, *Fasteners – General requirements for bolts, screws, studs and nuts.*

1) To be published. (Revision of ISO 261:1973)
2) To be published. (Revision of ISO 965-2:1980)
3) To be published. (Revision of ISO 4042:1989)
4) To be published. (Revision of ISO 4759-1:1978)

## 3 Dimensions

See figure 1 and table 1.

Symbols and designations of dimensions are specified in ISO 225.




1) Prevailing torque element, shape optional.
2) $m_w$ is the wrenching height; see note to table 1.
3) $\theta$ = 90° to 120°
4) $\delta$ = 15° to 25°
5) $c$ is measured at $d_{w,min}$.
6) Edge contour optional.

**Figure 1**

**Table 1 — Dimensions**

Dimensions in millimetres

| Thread ($d \times P$[1]) | | M8 × 1 | M10 × 1<br>M10 × 1,25 | M12 × 1,5<br>M12 × 1,25 | (M14 × 1,5)[2] | M16 × 1,5 | M20 × 1,5 |
|---|---|---|---|---|---|---|---|
| $c$ | min. | 1,2 | 1,5 | 1,8 | 2,1 | 2,4 | 3 |
| $d_a$ | max. | 8,75 | 10,8 | 13 | 15,1 | 17,3 | 21,6 |
| | min. | 8,00 | 10,0 | 12 | 14,0 | 16,0 | 20,0 |
| $d_c$ | max. | 17,9 | 21,8 | 26 | 29,9 | 34,5 | 42,8 |
| $d_w$ | min. | 15,8 | 19,6 | 23,8 | 27,6 | 31,9 | 39,9 |
| $e$ | min. | 14,38 | 16,64 | 20,03 | 23,36 | 26 | 32,95 |
| $h$ | max. | 9,40 | 11,40 | 13,80 | 15,9 | 18,3 | 22,4 |
| | min. | 8,74 | 10,34 | 12,57 | 14,8 | 17,2 | 20,3 |
| $m$ | min. | 7,64 | 9,64 | 11,57 | 13,3 | 15,3 | 18,7 |
| $m_w$ | min. | 4,6 | 5,6 | 6,8 | 7,7 | 8,9 | 10,7 |
| $s$ | max. | 13,00 | 15,00 | 18,00 | 21,00 | 24,00 | 30,00 |
| | min. | 12,73 | 14,73 | 17,73 | 20,67 | 23,67 | 29,16 |
| $r$[3] | max. | 0,48 | 0,6 | 0,72 | 0,88 | 0,96 | 1,2 |

NOTE — If the product passes the gauging given in annex A, the requirements for dimensions $e$, $c$ and $m_w$ are satisfied.

1) $P$ is the pitch of the thread.
2) The size in parentheses should be avoided if possible.
3) Radius $r$ applies both at the corners and the flats of the hexagon.

## 4 Requirements and reference International Standards

See table 2.

**Table 2 — Requirements and reference International Standards**

| | | | | | |
|---|---|---|---|---|---|
| **Material** | | Steel | | | |
| **General requirements** | International Standard | ISO 8992 | | | |
| **Thread** | Tolerance | 6H | | | |
| | International Standards | ISO 261, ISO 965-2 | | | |
| **Mechanical and performance properties** | Property class | 6 | 8 | | 10 |
| | Style decisive for mechanical properties[1)] | style 1 | $d \leqslant 16$ mm style 2 | $d > 16$ mm style 1 | style 2 |
| | International Standard | ISO 2320 | | | |
| **Tolerances** | Product grade | For $d \leqslant 16$ mm: A<br>For $d > 16$ mm: B | | | |
| | International Standard | ISO 4759-1 | | | |
| **Finish** | | As processed<br><br>Requirements for electroplated coatings are covered in ISO 4042.<br><br>If different electroplating requirements are desired or if requirements are needed for other finishes, they should be negotiated between customer and supplier.<br><br>Limits for surface discontinuities are covered in ISO 6157-2. | | | |
| **Acceptability** | | For acceptance procedure, see ISO 3269. | | | |

1) Based on the nut height (dimension $h_{min}$) nuts in accordance with this International Standard are of style 2. However, since for style 2 ISO 2320 does not specify mechanical properties for all property classes and sizes as specified in this International Standard, in some cases nuts have to be tested according to style 1.



## 5 Designation

EXAMPLE
A prevailing torque type hexagon all-metal nut with flange, with thread M12 × 1,5 and property class 8 is designated as follows:

**Prevailing torque type hexagon nut with flange ISO 12126 – M12 × 1,5 – 8**