BRITISH STANDARD

BS EN
1667:1998

Prevailing torque type all-metal hexagon nuts with flange with metric fine pitch thread

(ISO 12126:1997, modified)

The European Standard EN 1667:1997 has the status of a British Standard

ICS 21.060.20

National foreword

This British Standard is the English language version of EN 1667:1997.

The UK participation in its preparation was entrusted by Technical Committee FME/9, Bolts, nuts and accessories, to Subcommittee FME/9/10, Male and female prevailing torque fasteners, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible 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.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

WARNING

The United Kingdom, as a member of CEN, is obliged to publish EN 1667:1997 as a British Standard. However, attention is drawn to the fact that during the development of this European Standard the United Kingdom has consistently voted against its approval as a European Standard. The UK believes that the corresponding ISO Standard, ISO 12126:1997 should have been implemented as the European Standard. As far as the UK is concerned, it is dangerous and not acceptable to have a separate European Standard that differs from the corresponding ISO Standard by the across flats dimension for one size of fastener, all other requirements being identical between the two standards concerned.

As part of BSI's duty of care, we draw attention of users of this standard to our concerns that M10 nuts to this standard differ from similar fasteners conforming to ISO 12126:1997 in the across flats dimension only. This is 16 mm in the European Standard and 15 mm in the ISO. BSI will assume no liability whatsoever for the failure on the part of any user of this standard not to consider this aspect. Precautions are urged to ensure that comingling of M10 nuts to the two standards concerned is avoided.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, the EN title page, pages 2 to 6, an inside back cover and a back cover.

This British Standard, having been prepared under the direction of the Engineering Sector Board, was published under the authority of the Standards Board and comes into effect on 15 April 1998

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Amendments issued since publication

Amd. No.	Date	Text affected

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 1667

December 1997

ICS 21.060.20

Descriptors: Fasteners, nuts: fasteners, hexagonal nuts, flanged nuts, self locking nuts, metals, screw threads, dimensions, dimensional tolerances, characteristics, verification, designation

English version

Prevailing torque type all-metal hexagon nuts with flange with metric fine pitch thread

(ISO 12126:1997, modified)

Ecrous hexagonaux à embase, autofreinés, tout métal, à filetage métrique à pas fin
(ISO 12126:1997, modifiée)

Sechskantmuttern mit Klemmteil und Flansch, Ganzmetallmuttern, mit metrischem Feingewinde
(ISO 12126:1997, modifiziert)

This European Standard was approved by CEN on 1997-10-24.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart 36, B-1050 Brussels

Ref. No. EN 1667:1997 E

Foreword

This European Standard has been prepared by Technical Committee CEN/TC 185, Threaded and non-threaded mechanical fasteners and accessories, the secretariat of which is held by DIN.

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 1998, and conflicting national standards shall be withdrawn at the latest by June 1998.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

Endorsement notice

The text of the International Standard ISO 12126:1997 was approved by CEN as a European Standard with agreed common modifications given as below.

The dimensions of nuts correspond to those given in EN 1661 plus prevailing torque feature.

Nuts according to this European Standard correspond to those specified in the International Standard ISO 12126 with the exception that the width across flats for M10 is 16 mm (instead of 15 mm).

1 Scope

This European 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 up to and including 16 mm and product grade B for sizes $d > 16$ mm and with property classes 6, 8 and 10.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 493, *Fasteners — Surface discontinuities — Nuts*

prEN ISO 2320, *Prevailing torque type steel hexagon nuts — Mechanical and performance properties* (ISO/DIS 2320:1994)

prEN ISO 4042, *Fasteners — Electroplated coatings* (ISO/DIS 4042:1996)

prEN ISO 4759-1, *Tolerances for fasteners — Part 1: Bolts, screws, studs and nuts — Product grades A, B and C* (ISO/DIS 4759-1:1997)

ISO 724, *ISO general purpose metric screw threads — Basic dimensions*

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

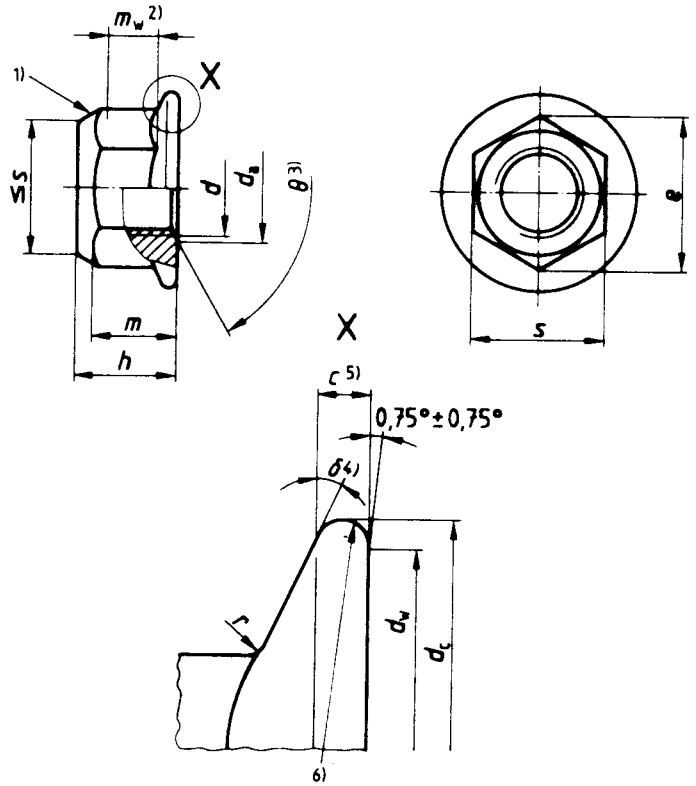
ISO 3269, *Fasteners — Acceptance inspection*

ISO 8992, *Fasteners — General requirements for bolts, screws, studs and nuts*

3 Dimensions

Dimensions shall be in accordance with Figure 1 and Table 1.

NOTE Symbols and designations of dimensions are specified in EN 20225.



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

Figure 1

Table 1

Dimensions in millimetres

Thread, $d \times P$ [2]		**M8 × 1**	**M10 × 1** **M10 × 1,25**	**M12 × 1,5** **M12 × 1,25**	**(M14 × 1,5)**[1]	**M16 × 1,5**	**M20 × 1,5**
c	min.	1,2	1,5	1,8	2,1	2,4	3
d_a	min.	8,00	10,0	12	14,0	16,0	20,0
	max.	8,75	10,8	13	15,1	17,3	21,6
d_c	min.	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	17,77	20,03	23,36	26,75	32,95
h	min.	9,40	11,40	13,80	15,9	18,3	22,4
	max.	8,74	10,34	12,57	14,8	17,2	20,3
m	min.	7,6	9,6	11,6	13,3	15,3	18,7
m_w	min.	4,6	5,9	6,8	7,7	8,9	10,7
s	max.	13,00	16,00	18,00	21,00	24,00	30,00
	min.	12,73	15,73	17,73	20,67	23,67	29,16
r [3]	max.	0,48	0,6	0,72	0,88	0,96	1,2

[1] The size in brackets should be avoided if possible.

[2] P is the pitch of the thread.

[3] Radius r applies both at the corners and the flats of the hexagon.

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

4 Requirements and reference European or International Standards

The requirements given in Table 2 apply.

If, in special cases, specifications other than those listed in this European Standard are required, they shall be selected from existing European or International Standards, for example ISO 724, ISO 965-2, prEN ISO 2320, prEN ISO 4759-1.

5 Designation

EXAMPLE:

Designation of a prevailing torque type hexagon all-metal nut with flange, with thread M12 × 1,5 and property class 8:

Hexagon nut EN 1667 – M12 × 1,5 – 8

Table 2

Material		Steel			
General requirements	International Standard	ISO 8992			
Thread	Tolerance	6H			
	International Standards	ISO 724, ISO 965-2			
Mechanical and performance properties	Property class	6	8		10
	Style decisive for mechanical properties[1)]	style 1	$d \leq 16$ mm style 2	$d > 16$ mm style 1	style 2
	European Standard	prEN ISO 2320			
Tolerances	Product grade	For $d \leq 16$ mm: A For $d > 16$ mm: B			
	European Standard	prEN ISO 4759-1			
Finish		As processed Requirements for electroplated coatings are covered in prEN ISO 4042. If different electroplating requirements are desired or if requirements are needed for other finishes, they should be negotiated between customer and supplier. Limits for surface discontinuities are covered in EN 493.			
Acceptability		For acceptance inspection ISO 3269 applies.			

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

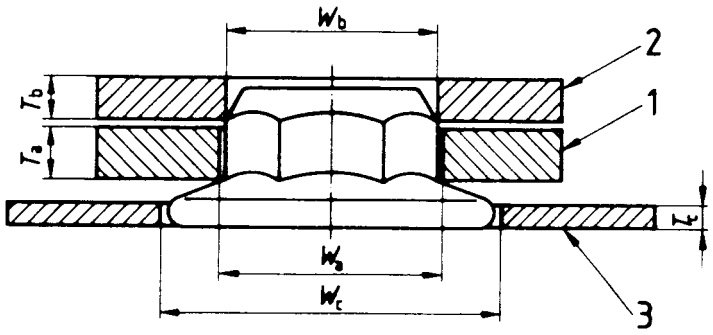
Annex A (normative)
Gauging of hexagon nuts with flange

A.1 Recommended method for gauging of hexagon (see Figure A.1 and Table A.1)

The nut shall be gauged using two plain ring gauges, A and B, to demonstrate the coincidental acceptability of hexagon height, wrenching height, corner fill and width across corners. Gauge A shall be placed over the hexagon and shall be seated on the flange. Gauge B shall be placed on the top of the nut normal to the nut axis. The two gauges shall not be in contact.

A.2 Recommended method for gauging of flange (see Figure A.1 and Table A.1)

Gauge C is a flat feeler or ring gauge. It is used to prove that the flange thickness at the junction of the gauge with the hexagon portion is equal to or greater than specified values. The acceptance criterion is that gauge C will fit under gauge A without contact when the nut is seated on a flat plate.



1 Gauge A
2 Gauge B
3 Gauge C

NOTE $W_{a,\,min} = e_{theoretical}$
$W_{b,\,max} = e_{min} - 0{,}01$ mm
$T_{a,\,max} = m_{w,\,min}$

Figure A.1

Table A.1

Dimensions in millimetres

Nominal thread diameter d	Gauge A				Gauge B			Gauge C		
	W_a		T_a		W_b		T_b	W_c	T_c	
	max.	min.	max.	min.	max.	min.	min.	min.	max.	min.
8	15,02	15,01	4,60	4,59	14,37	14,36	4	20	1,31	1,30
10	18,49	18,48	5,90	5,89	17,76	17,75	5	24	1,65	1,64
12	20,79	20,78	6,80	6,79	20,02	20,01	5	29	2,20	2,19
14	24,26	24,25	7,70	7,69	23,35	23,34	6	32,5	2,55	2,54
16	27,72	27,71	8,90	8,89	26,74	26,73	6	37	2,96	2,95
20	34,65	34,64	10,70	10,69	32,94	32,93	6	45	3,70	3,69

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