BRITISH STANDARD

BS EN
1666:1998

Prevailing torque type hexagon nuts with flange (with non-metallic insert) with metric fine pitch thread

(ISO 12125:1997, modified)

The European Standard EN 1666:1997 has the status of a British Standard

ICS 21.060.20

National foreword

This British Standard is the English language version of EN 1666:1997.

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 1666:1997 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 12125:1997 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 12125:1997 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

ISBN 0 580 29326 2

Amendments issued since publication

Amd. No.	Date	Text affected

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 1666

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 hexagon nuts with flange (with non-metallic insert) with metric fine pitch thread

(ISO 12125:1997, modified)

Ecrous hexagonaux embase, autofreinés, (avec anneau non métallique), à filetage métrique à pas fin
(ISO 12125:1997, modifiée)

Sechskantmuttern mit Klemmteil und Flansch (mit nichtmetallischem Einsatz), und metrischem Feingewinde
(ISO 12125:1997, 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 1666:1997 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 12125:1997 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 12125 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 hexagon nuts with flange, with non-metallic annular insert and metric fine pitch thread with nominal thread diameters d from 8 mm up to and including 20 mm, in product grade A for $d \leq 16$ mm and product grade B for $d > 16$ 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*

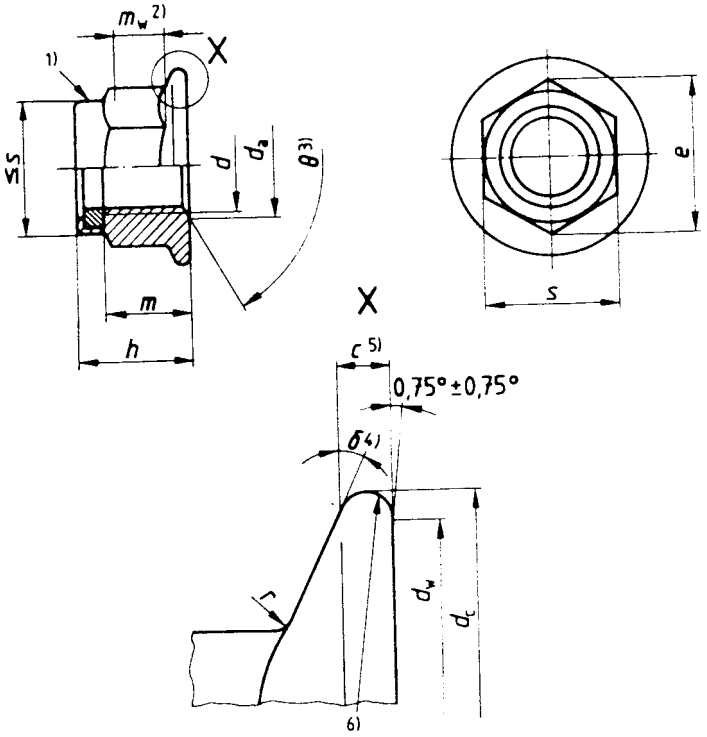
ISO 3269, *Fasteners — Acceptance inspection*

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) $\theta = 90°$ to $120°$.
4) $\delta = 15°$ 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.	8,0	10,0	12	14,0	16,0	20,0
	max.	8,75	10,8	13	15,1	17,3	21,6
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	17,77	20,03	23,36	26,75	32,95
h	min.	11,1	13,5	16,1	18,2	20,3	24,8
	max.	10,4	12,8	15,4	16,9	19,0	22,7
m[3)]	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[4)]	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)] Minimum thread height.

[4)] 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 nut with flange, with non-metallic insert, thread M12 × 1,5 and property class 8:

Hexagon nut EN 1666 – M12 × 1,5 – 8

Table 2

Material	Nut body	Steel			
	Insert	For example, polyamid			
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 thread height (dimension m_{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.

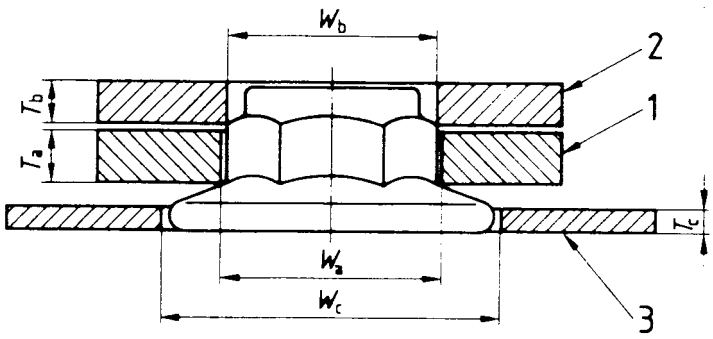
Annex A (normative)
Gauging of hexagon nuts with flange

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	Gauge A				Gauge B			Gauge C		
	W_a		T_a		W_b		T_b	W_c	T_c	
d	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	6,0	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

blank

BSI — British Standards Institution

BSI is the independent national body responsible for preparing British Standards. It presents the UK view on standards in Europe and at the international level. It is incorporated by Royal Charter.

Revisions

British Standards are updated by amendment or revision. Users of British Standards should make sure that they possess the latest amendments or editions.

It is the constant aim of BSI to improve the quality of our products and services. We would be grateful if anyone finding an inaccuracy or ambiguity while using this British Standard would inform the Secretary of the technical committee responsible, the identity of which can be found on the inside front cover. Tel: 020 8996 9000. Fax: 020 8996 7400.

BSI offers members an individual updating service called PLUS which ensures that subscribers automatically receive the latest editions of standards.

Buying standards

Orders for all BSI, international and foreign standards publications should be addressed to Customer Services. Tel: 020 8996 9001. Fax: 020 8996 7001.

In response to orders for international standards, it is BSI policy to supply the BSI implementation of those that have been published as British Standards, unless otherwise requested.

Information on standards

BSI provides a wide range of information on national, European and international standards through its Library and its Technical Help to Exporters Service. Various BSI electronic information services are also available which give details on all its products and services. Contact the Information Centre. Tel: 020 8996 7111. Fax: 020 8996 7048.

Subscribing members of BSI are kept up to date with standards developments and receive substantial discounts on the purchase price of standards. For details of these and other benefits contact Membership Administration. Tel: 020 8996 7002. Fax: 020 8996 7001.

Copyright

BSI
389 Chiswick High Road
London
W4 4AL