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Fifth edition
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Fasteners — Hexagon regular nuts (style 1)

Fixations — Écrous normaux hexagonaux (style 1)

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 2, *Fasteners*, Subcommittee SC 12, *Fasteners with metric internal thread*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 185, *Fasteners*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This fifth edition cancels and replaces the fourth edition (ISO 4032:2012) which has been technically revised.

The main changes are as follows:

— nuts with D < M5 and D > M39 (with m_{min} < 0,8D not conforming to ISO 898-2 nor to ISO 3506-2) have been shifted to informative Annex A; reference to ISO/TR 16224 for appropriate nut design has been added;

— M7 has been added;

— values of c_{max} for sizes M1,6 to M2,5 have been amended in accordance with ISO 4759-1;

— $d_{a,max}$, $d_{w,min}$ and $m_{w,min}$ have been specified with two decimal places;

— $d_{w,min}$ for sizes D ≤ M5 has been changed from s_{min} – IT16 to s_{min} – IT15 in order to have a larger bearing surface area and thus less contact pressure;

— for steel nuts, quenching and tempering condition has been specified in accordance with ISO 898-2, and property classes 5 and 12 have been added;

— for stainless steel nuts, grades D4 and D6 and property class 80 have been added;

— non-ferrous metal nuts have been deleted (as a consequence of the withdrawal of ISO 8839);

— specifications for marking and labelling have been added as Clause 6.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Fasteners — Hexagon regular nuts (style 1)

1 Scope

This document specifies the characteristics of hexagon regular nuts (style 1), in steel and stainless steel, with metric coarse pitch thread M5 to M39, and with product grades A and B.

NOTE For nuts with sizes D < M5 and D > M39, see Annex A.

If in certain cases other specifications are requested, property classes and stainless steel grades can be selected from ISO 898-2 or ISO 3506-2.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 225, *Fasteners — Bolts, screws, studs and nuts — Symbols and descriptions of dimensions*

ISO 898-2, *Fasteners — Mechanical properties of fasteners made of carbon steel and alloy steel — Part 2: Nuts with specified property classes*

ISO 965-1, *ISO general purpose metric screw threads — Tolerances — Part 1: Principles and basic data*

ISO 1891-4, *Fasteners — Vocabulary — Part 4: Control, inspection, delivery, acceptance and quality*

ISO 3269, *Fasteners — Acceptance inspection*

ISO 3506-2, *Fasteners — Mechanical properties of corrosion-resistant stainless steel fasteners — Part 2: Nuts with specified grades and property classes*

ISO 4042, *Fasteners — Electroplated coating systems*

ISO 4759-1, *Tolerances for fasteners — Part 1: Bolts, screws, studs and nuts — Product grades A, B and C*

ISO 6157-2, *Fasteners — Surface discontinuities — Part 2: Nuts*

ISO 8991, *Designation system for fasteners*

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

ISO 10683, *Fasteners — Non-electrolytically applied zinc flake coating systems*

ISO 10684, *Fasteners — Hot dip galvanized coatings*

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

4 Dimensions

Dimensions for nuts M5 to M39 shall be in accordance with Figures 1 and 2, and with Tables 1 and 2. Unless otherwise specified at the time of the order, the nuts are delivered without washer-face.

NOTE For nuts with sizes D < M5 and D > M39, see Annex A.

Symbols and descriptions of dimensions are specified in ISO 225.

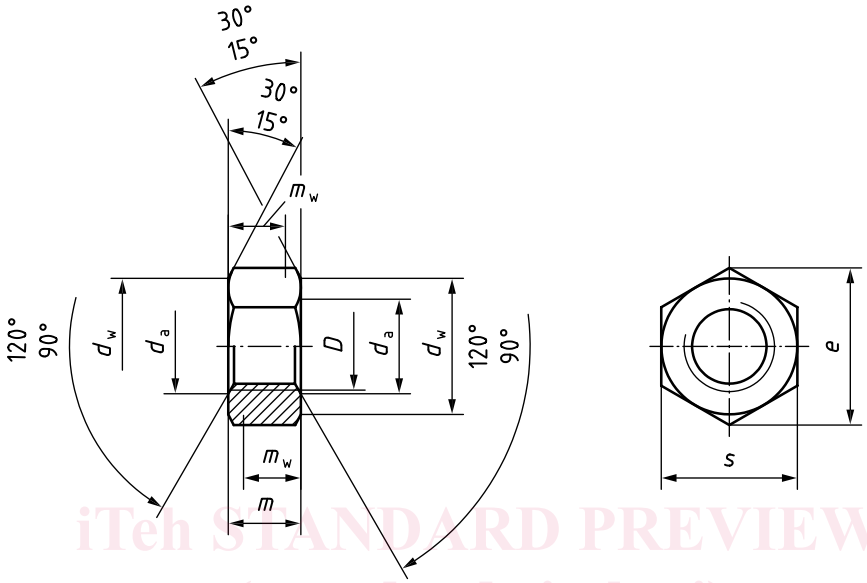
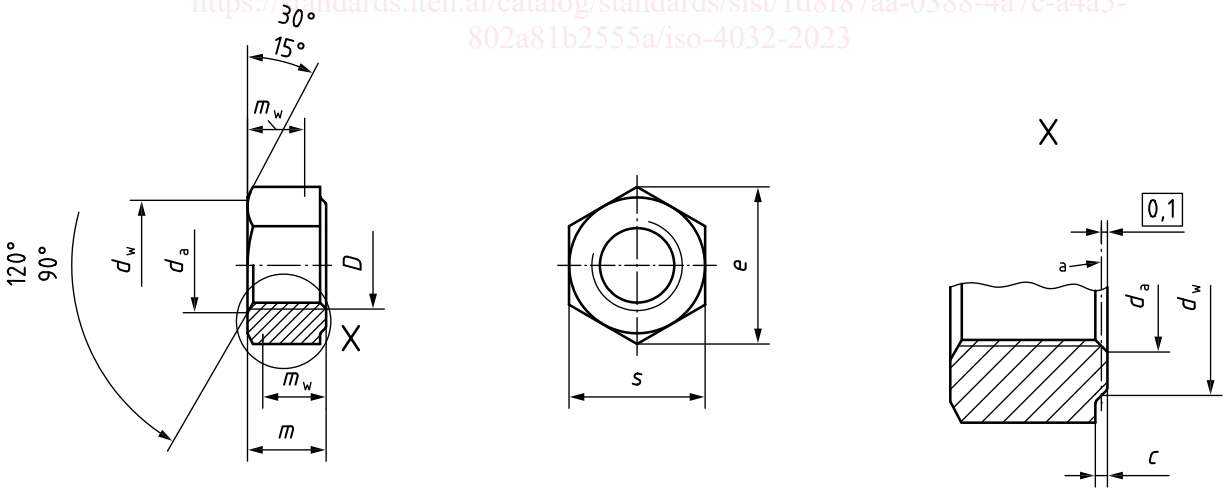


Figure 1 — Nut without washer-face

Dimension in millimetres



a Reference datum for d_w.

Figure 2 — Nut with optional washer-face

Table 1 — Dimensions for nuts M5 to M16 (product grade A)

Dimensions in millimetres

Thread, *D*		**M5**	**M6**	(M7)	**M8**	**M10**	**M12**	(M14)	**M16**
P [a]		0,8	1	1	1,25	1,5	1,75	2	2
c [b]	max.	0,50	0,50	0,60	0,60	0,60	0,60	0,60	0,80
	min.	0,15	0,15	0,15	0,15	0,15	0,15	0,15	0,20
d_a	max.	5,75	6,75	7,75	8,75	10,80	12,96	15,12	17,28
	min.	5,00	6,00	7,00	8,00	10,00	12,00	14,00	16,00
d_w	min.	7,20	8,88	9,63	11,63	14,63	16,63	19,64	22,49
e	min.	8,79	11,05	12,12	14,38	17,77	20,03	23,36	26,75
m	max.	4,70	5,20	6,50	6,80	8,40	10,80	12,80	14,80
	min.	4,40	4,90	6,14	6,44	8,04	10,37	12,10	14,10
m_w	min.	3,52	3,92	4,91	5,15	6,43	8,30	9,68	11,28
s	nom. = max.	8,00	10,00	11,00	13,00	16,00	18,00	21,00	24,00
	min.	7,78	9,78	10,73	12,73	15,73	17,73	20,67	23,67

NOTE Sizes shown in brackets are non-preferred.

[a] *P* is the pitch of the thread.

[b] *c* only applies if a washer-face is present.

Table 2 — Dimensions for nuts M18 to M39 (product grade B)

Dimensions in millimetres

Thread, *D*		(M18)	**M20**	(M22)	**M24**	(M27)	**M30**	(M33)	**M36**	(M39)
P [a]		2,5	2,5	2,5	3	3	3,5	3,5	4	4
c [b]	max.	0,80	0,80	0,80	0,80	0,80	0,80	0,80	0,80	1,00
	min.	0,20	0,20	0,20	0,20	0,20	0,20	0,20	0,20	0,30
d_a	max.	19,44	21,60	23,76	25,92	29,16	32,40	35,64	38,88	42,12
	min.	18,00	20,00	22,00	24,00	27,00	30,00	33,00	36,00	39,00
d_w	min.	24,85	27,70	31,35	33,25	38,00	42,75	46,55	51,11	55,86
e	min.	29,56	32,95	37,29	39,55	45,20	50,85	55,37	60,79	66,44
m	max.	15,80	18,00	19,40	21,50	23,80	25,60	28,70	31,00	33,40
	min.	15,10	16,90	18,10	20,20	22,50	24,30	27,40	29,40	31,80
m_w	min.	12,08	13,52	14,48	16,16	18,00	19,44	21,92	23,52	25,44
s	nom. = max.	27,00	30,00	34,00	36,00	41,00	46,00	50,00	55,00	60,00
	min.	26,16	29,16	33,00	35,00	40,00	45,00	49,00	53,80	58,80

NOTE Sizes shown in brackets are non-preferred.

[a] *P* is the pitch of the thread.

[b] *c* only applies if a washer-face is present.

5 Requirements and reference International Standards

The requirements specified in the International Standards referenced in Table 3 shall apply for nuts M5 to M39 only.

NOTE For nuts with sizes D < M5 and D > M39, see Annex A.

Table 3 — Requirements and reference International Standards

Material		**Steel**		**Stainless steel**	
General requirements	International Standard	ISO 8992			
Thread	Tolerance class	6H [a]			
	International Standard	ISO 965-1			
Mechanical properties	Style	1			
	Property class Symbol	M5 ≤ D ≤ M16	5 [b], 6 [b], 8 [c], 10 [d], 12 [d]	—	
		M16 < D ≤ M39	5 [b], 6 [b], 8 [d], 10 [d]		
	Grade [e] and property class Symbol	—		M5 ≤ D ≤ M24	A2-70, A4-70, A4-80, D4-80, D6-80
				M24 < D ≤ M39	A2-50, A2-70, A4-50, A4-70, D4-70, D6-70
	International Standard	ISO 898-2		ISO 3506-2	
Tolerances	Product grade	D ≤ M16: A (except for M5 where $d_{w,min} = s_{min}$ – IT15)		D > M16: B	
	International Standard	ISO 4759-1			
Surface condition		As processed (no coating) Electroplated coatings as specified in ISO 4042 Non-electrolytically applied zinc flake coatings as specified in ISO 10683 Hot dip galvanized coatings as specified in ISO 10684		Clean and bright and/or Passivated [f]	
		Other finishes, coatings and/or additional requirements shall be agreed between the purchaser and the supplier			
Surface integrity		Limits for surface discontinuities as specified in ISO 6157-2		As agreed [g]	
Acceptability		Acceptance inspection as specified in ISO 3269			

[a] Depending on the type of coating to be applied, another tolerance position of the thread may be specified for the uncoated nuts in accordance with the relevant coating standard.

[b] Shall not be quenched and tempered in accordance with ISO 898-2 (NQT nuts).

[c] May be quenched and tempered at the manufacturer's discretion, in accordance with ISO 898-2 (NQT or QT nuts).

[d] Shall be quenched and tempered in accordance with ISO 898-2 (QT nuts).

[e] The most common stainless steel grades are A2 and A4; however, depending on the application, it can be necessary to select other grades in ISO 3506-2 suitable for the service corrosive environment. For use at high temperatures (up to 800 °C), mechanical properties are specified in ISO 3506-5. See also ISO 3506-6 for the selection of suitable stainless steel grades.

[f] See e.g. ISO 16048.

[g] See e.g. ISO 6157-2.