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Hexagon nuts and hexagon thin nuts

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Foreword

This translation has been made based on the original Japanese Industrial Standard revised by the Minister of Economy, Trade and Industry, through deliberations at the Japanese Industrial Standards Committee as the result of proposal for revision of Japanese Industrial Standard submitted by The Japan Research Institute for Screw Threads and Fasteners (JFRI) / Japanese Standards Association (JSA) with the draft being attached, based on the provision of Article 12 Clause 1 of the Industrial Standardization Law applicable to the case of revision by the provision of Article 14.

Consequently, **JIS B 1181 : 2009** is replaced with this Standard.

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Hexagon nuts and hexagon thin nuts

Introduction

This Japanese Industrial Standard has been prepared based on the fourth edition of **ISO 4032** published in 2012, third edition of **ISO 4033** published in 2012, the fourth editions of **ISO 4034** and **ISO 4035** published in 2012, and the third editions of **ISO 4036**, **ISO 8673**, **ISO 8674** and **ISO 8675** published in 2012 by integrating them into one standard without modifying the technical contents for corresponding parts (shape and dimensions, product specification and examples of product designations). Annex JA and Annex JB contain specifications of characteristics of hexagon nuts and hexagon thin nuts that are not given in **ISO** standards, to reflect the actualities of the production and application of nuts that are unique to Japan.

The portions given sidelines or dotted underlines are the matters in which the contents of the corresponding International Standards have been modified. A list of modifications with the explanations is given in Annex JC.

1 Scope

This Standard specifies hexagon nuts and hexagon thin nuts (hereafter generically referred to as “hexagon nuts”) made of steel, stainless steel and non-ferrous metals.

If, in special cases, dimensions and product specifications other than those listed in this Standard are required, they shall be selected from existing Japanese Industrial Standards, for example **JIS B 0205-4**, **JIS B 0209-1**, **JIS B 1021**, **JIS B 1052-2**, **JIS B 1052-6** and **JIS B 1054-2** upon agreement between the purchaser and the manufacturer.

Annex JA gives specifications of hexagon nuts not given in **ISO 4032** to **ISO 4036**, and **ISO 8673** to **ISO 8675**. Annex JB gives specifications of steel nuts of property classes 4 T to 10 T.

NOTE : The International Standards corresponding to this Standard and the symbol of degree of correspondence are as follows.

ISO 4032 : 2012 *Hexagon regular nuts (style 1) — Product grades A and B*

ISO 4033 : 2012 *Hexagon high nuts (style 2) — Product grades A and B*

ISO 4034 : 2012 *Hexagon regular nuts (style 1) — Product grade C*

ISO 4035 : 2012 *Hexagon thin nuts chamfered (style 0) — Product grades A and B*

ISO 4036 : 2012 *Hexagon thin nuts unchamfered (style 0) — Product grade B*

ISO 8673 : 2012 *Hexagon regular nuts (style 1) with metric fine pitch thread — Product grades A and B*

ISO 8674 : 2012 *Hexagon high nuts (style 2) with metric fine pitch thread — Product grades A and B*

ISO 8675 : 2012 *Hexagon thin nuts chamfered (style 0) with metric fine pitch thread — Product grades A and B* (Overall evaluation : MOD)

In addition, symbols which denote the degree of correspondence in the contents between the relevant International Standards and **JIS** are IDT (identical), MOD (modified), and NEQ (not equivalent) according to **ISO/IEC Guide 21-1**.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this Standard. The most recent editions of the standards (including amendments) listed below shall be applied.

JIS B 0101 *Screw threads and fasteners — Vocabulary*

JIS B 0143 *Fasteners — Bolts, screws, studs and nuts — Symbols and descriptions of dimensions*

NOTE : Corresponding International Standard : ISO 225 : 2010 *Fasteners — Bolts, screws, studs and nuts — Symbols and descriptions of dimensions* (IDT)

JIS B 0205-1 *ISO general purpose metric screw threads — Part 1 : Basic profile*

NOTE : Corresponding International Standard : ISO 68-1 : 1998 *ISO general purpose screw threads — Basic profile — Part 1 : Metric screw threads* (IDT)

JIS B 0205-2 *ISO general purpose metric screw threads — Part 2 : General plan*

NOTE : Corresponding International Standard : ISO 261 : 1998 *ISO general purpose metric screw threads — General plan* (IDT)

JIS B 0205-3 *ISO general purpose metric screw threads — Part 3 : Selected sizes for screws, bolts and nuts*

NOTE : Corresponding International Standard : ISO 262 : 1998 *ISO general purpose metric screw threads — Selected sizes for screws, bolts and nuts* (IDT)

JIS B 0205-4 *ISO general purpose metric screw threads — Part 4 : Basic dimensions*

NOTE : Corresponding International Standard : ISO 724 : 1993 *ISO general purpose metric screw threads — Basic dimensions* (IDT)

JIS B 0209-1 *ISO general purpose metric screw threads — Tolerances — Part 1 : Principles and basic data*

NOTE : Corresponding International Standard : ISO 965-1 : 1998 *ISO general purpose metric screw threads — Tolerances — Part 1 : Principles and basic data* (IDT)

JIS B 0251 *Limit gauges for metric screw threads*

JIS B 0601 *Geometrical Product Specifications (GPS) — Surface texture : Profile method — Terms, definitions and surface texture parameters*

JIS B 0651 *Geometrical Product Specifications (GPS) — Surface texture : Profile method — Nominal characteristics of contact (stylus) instruments*

JIS B 0659-1 *Geometrical Product Specifications (GPS) — Surface texture : Profile method; Measurement standards — Part 1 : Material measures*

JIS B 1021 *Tolerances for fasteners — Part 1 : Bolts, screws, studs and nuts — Product grades A, B and C*

NOTE : Corresponding International Standard : ISO 4759-1 : 2000 *Tolerances for fasteners — Part 1 : Bolts, screws, studs and nuts — Product grades A, B and C* (IDT)

JIS B 1042 *Fasteners — Surface discontinuities — Part 2 : Nuts*

NOTE : Corresponding International Standard : ISO 6157-2 : 1995 *Fasteners — Surface discontinuities — Part 2 : Nuts* (IDT)

JIS B 1044 *Fasteners — Electroplated coatings*

NOTE : Corresponding International Standard : ISO 4042 : 1999 *Fasteners — Electroplated coatings* (IDT)

JIS B 1046 *Fasteners — Non-electrolytically applied zinc flake coatings*

NOTE : Corresponding International Standard : ISO 10683 : 2000 *Fasteners — Non-electrolytically applied zinc flake coatings* (IDT)

JIS B 1047 *Passivation of corrosion-resistant stainless-steel fasteners*

NOTE : Corresponding International Standard : ISO 16048 : 2003 *Passivation of corrosion-resistant stainless-steel fasteners* (IDT)

JIS B 1048 *Fasteners — Hot dip galvanized coatings*

NOTE : Corresponding International Standard : ISO 10684 : 2004 *Fasteners — Hot dip galvanized coatings* (MOD)

JIS B 1052-2 *Mechanical properties of fasteners made of carbon steel and alloy steel — Part 2 : Nuts with specified property classes — Coarse thread and fine pitch thread*

NOTE : Corresponding International Standard : ISO 898-2 : 1992 *Mechanical properties of fasteners — Part 2 : Nuts with specified proof load values — Coarse thread* (IDT)

JIS B 1052-6 *Mechanical properties of fasteners — Part 6 : Nuts with specified proof load values — Fine pitch thread*

NOTE : Corresponding International Standard : ISO 898-6 : 1994 *Mechanical properties of fasteners — Part 6 : Nuts with specified proof load values — Fine pitch thread* (IDT)

JIS B 1054-2 *Mechanical properties of corrosion-resistant stainless steel fasteners — Part 2 : Nuts*

NOTE : Corresponding International Standard : ISO 3506-2 : 2009 *Mechanical properties of corrosion-resistant stainless-steel fasteners — Part 2 : Nuts* (IDT)

JIS B 1057 *Mechanical properties of non-ferrous metal fasteners*

NOTE : Corresponding International Standard : ISO 8839 : 1986 *Mechanical properties of fasteners — Bolts, screws, studs and nuts made of non-ferrous metals* (MOD)

JIS B 1071 *Fasteners — Methods of verification for size and geometry*

JIS B 1091 *Fasteners — Acceptance inspection*

NOTE : Corresponding International Standard : ISO 3269 : 2000 *Fasteners — Acceptance inspection* (IDT)

JIS B 1099 *Fasteners — General requirements for bolts, screws, studs and nuts*

NOTE : Corresponding International Standard : ISO 8992 : 2005 *Fasteners — General requirements for bolts, screws, studs and nuts* (IDT)

JIS Z 2243 *Brinell hardness test — Test method*

JIS Z 2245 *Rockwell hardness test — Test method*

3 Types

The types of hexagon nuts specified in this Standard are as shown in table 1.

Table 1 Types of hexagon nuts

Designation	Type		Range of nominal diameter D of thread (mm)	Corresponding International Standard (informative)
	Pitch of thread	Product grade		
Hexagon nut — style 1	Coarse thread	A	1.6 to 16	ISO 4032
		B	18 to 64	
	Fine pitch thread	A	8 to 16	ISO 8673
		B	18 to 64	
Hexagon nut — style 2	Coarse thread	A	5 to 16	ISO 4033
		B	20 to 36	
	Fine pitch thread	A	8 to 16	ISO 8674
		B	18 to 36	
Hexagon nut — C	Coarse thread	C	5 to 64	ISO 4034
Hexagon thin nut — chamfered	Coarse thread	A	1.6 to 16	ISO 4035
		B	18 to 64	
	Fine pitch thread	A	8 to 16	ISO 8675
		B	18 to 64	
Hexagon thin nut — unchamfered	Coarse thread	B	1.6 to 10	ISO 4036

4 Shape and dimensions, product specifications and example of product designation

Shape and dimensions, product specifications and example of product designation of the hexagon nuts specified in this Standard shall be in accordance with table 2.

Symbols and descriptions of dimensions shall be in accordance with **JIS B 0143**.

Table 2 Shape and dimensions, product specifications and example of product designation

Type			Shape and dimensions			Product specifications	Example of product designation
Designation	Pitch of thread	Product grade	Figure	First selection	Second selection		
Hexagon nut — style 1	Coarse thread	A	Figure 1	Table 3	Table 4	Table 5	Table 6
		B					
	Fine pitch thread	A	Figure 2	Table 7	Table 8	Table 9	Table 10
		B					
Hexagon nut — style 2	Coarse thread	A	Figure 3	Table 11		Table 12	Table 13
		B					
	Fine pitch thread	A	Figure 4	Table 14	Table 15	Table 16	Table 17
		B					
Hexagon nut — C	Coarse thread	C	Figure 5	Table 18	Table 19	Table 20	Table 21
Hexagon thin nut — chamfered	Coarse thread	A	Figure 6	Table 22	Table 23	Table 24	Table 25
		B					
	Fine pitch thread	A	Figure 7	Table 26	Table 27	Table 28	Table 29
		B					
Hexagon thin nut — unchamfered	Coarse thread	B	Figure 8	Table 30		Table 31	Table 32

5 Marking

5.1 Marking on products

Products found to be in conformance with all the requirements in this Standard shall be given the following marking.

- a) For steel nuts with nominal diameter of thread 39 mm or under, marking on products shall be in accordance with **9.2 of JIS B 1052-2** and **JIS B 1052-6**.

For those with nominal diameter of thread above 39 mm, it shall be as agreed between the purchaser and the manufacturer.

- b) For stainless steel nuts, marking on products shall be in accordance with **4.2 of JIS B 1054-2**.
- c) For non-ferrous metal nuts, marking on products shall be in accordance with **9.1 of JIS B 1057**.

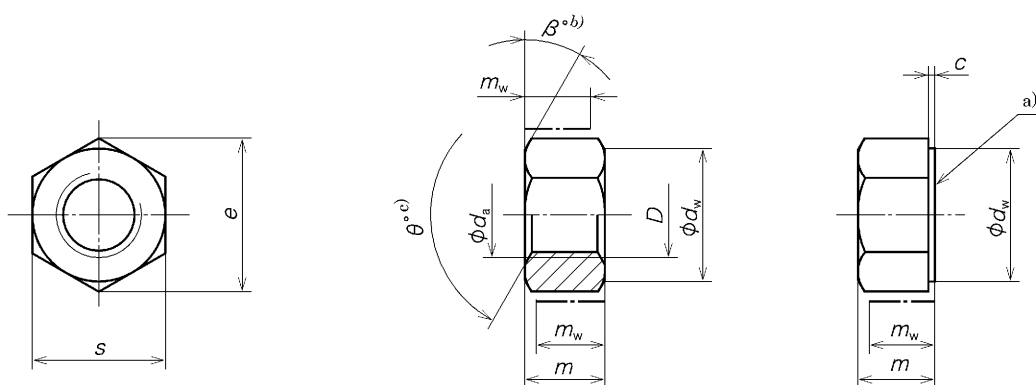
5.2 Marking on packages

Packages of products found to be in conformance with all the requirements in this Standard shall be given the following marking on their outer surface.

- a) Type
- b) Product grade
- c) Designation of thread
- d) Tolerance class of thread
- e) Property class (for steel nuts), property class (for stainless steel nuts), or material class (for non-ferrous metal nuts). This marking shall be omitted for hexagon thin nuts (unchamfered).
- f) Material ¹⁾
- g) Quantity and special requirements
- h) Name of manufacturer or its abbreviation

Note ¹⁾ The marking of material is mandatory for stainless steel nuts (except for those for which the requirements in **JIS B 1054-2** have been applied), non-ferrous metal nuts, steel nuts of class 3 (see Annex JA, except for those for which the requirements in Annex JB, **JIS B 1052-2** or **JIS B 1052-6** have been applied), and steel nuts with nominal diameter of thread 42 mm or over, and for other nuts, it is optional.

For marking of material, the general name of the material may be used.



Notes ^{a)} Unless otherwise specified at the time of order, the nuts are delivered without washer-face.

^{b)} $\beta = 15^\circ$ to 30°

^{c)} $\theta = 90^\circ$ to 120°

Figure 1 Hexagon nut, style 1, coarse

Table 3 Dimensions of hexagon nut, style 1, coarse (first selection)

Unit: mm

Designation of thread D		M1.6	M2	M2.5	M3	M4	M5	M6	M8	M10	M12
$P^a)$		0.35	0.4	0.45	0.5	0.7	0.8	1	1.25	1.5	1.75
c	max.	0.20	0.20	0.30	0.40	0.40	0.50	0.50	0.60	0.60	0.60
	min.	0.10	0.10	0.10	0.15	0.15	0.15	0.15	0.15	0.15	0.15
d_a	max.	1.84	2.30	2.90	3.45	4.60	5.75	6.75	8.75	10.80	13.00
	min.	1.60	2.00	2.50	3.00	4.00	5.00	6.00	8.00	10.00	12.00
d_w	min.	2.40	3.10	4.10	4.60	5.90	6.90	8.90	11.60	14.60	16.60
e	min.	3.41	4.32	5.45	6.01	7.66	8.79	11.05	14.38	17.77	20.03
m	max.	1.30	1.60	2.00	2.40	3.20	4.70	5.20	6.80	8.40	10.80
	min.	1.05	1.35	1.75	2.15	2.90	4.40	4.90	6.44	8.04	10.37
m_w	min.	0.80	1.10	1.40	1.70	2.30	3.50	3.90	5.20	6.40	8.30
s	Reference dimension = max.	3.20	4.00	5.00	5.50	7.00	8.00	10.00	13.00	16.00	18.00
	min.	3.02	3.82	4.82	5.32	6.78	7.78	9.78	12.73	15.73	17.73

Designation of thread D		M16	M20	M24	M30	M36	M42	M48	M56	M64
$P^a)$		2	2.5	3	3.5	4	4.5	5	5.5	6
c	max.	0.80	0.80	0.80	0.80	0.80	1.00	1.00	1.00	1.00
	min.	0.20	0.20	0.20	0.20	0.20	0.30	0.30	0.30	0.30
d_a	max.	17.30	21.60	25.90	32.40	38.90	45.40	51.80	60.50	69.10
	min.	16.00	20.00	24.00	30.00	36.00	42.00	48.00	56.00	64.00
d_w	min.	22.50	27.70	33.30	42.80	51.10	60.00	69.50	78.70	88.20
e	min.	26.75	32.95	39.55	50.85	60.79	71.30	82.60	93.56	104.86
m	max.	14.80	18.00	21.50	25.60	31.00	34.00	38.00	45.00	51.00
	min.	14.10	16.90	20.20	24.30	29.40	32.40	36.40	43.40	49.10
m_w	min.	11.30	13.50	16.20	19.40	23.50	25.90	29.10	34.70	39.30
s	Reference dimension = max.	24.00	30.00	36.00	46.00	55.00	65.00	75.00	85.00	95.00
	min.	23.67	29.16	35.00	45.00	53.80	63.10	73.10	82.80	92.80

Note ^{a)} P is the pitch of the thread.

Table 4 Dimensions of hexagon nut, style 1, coarse (second selection)

Unit: mm

Designation of thread D		M3.5	M14	M18	M22	M27	M33	M39	M45	M52	M60
$P^a)$		0.6	2	2.5	2.5	3	3.5	4	4.5	5	5.5
c	max.	0.40	0.60	0.80	0.80	0.80	0.80	1.00	1.00	1.00	1.00
	min.	0.15	0.15	0.20	0.20	0.20	0.20	0.30	0.30	0.30	0.30
d_a	max.	4.00	15.10	19.50	23.70	29.10	35.60	42.10	48.60	56.20	64.80
	min.	3.50	14.00	18.00	22.00	27.00	33.00	39.00	45.00	52.00	60.00
d_w	min.	5.00	19.60	24.90	31.40	38.00	46.60	55.90	64.70	74.20	83.40
e	min.	6.58	23.36	29.56	37.29	45.20	55.37	66.44	76.95	88.25	99.21
m	max.	2.80	12.80	15.80	19.40	23.80	28.70	33.40	36.00	42.00	48.00
	min.	2.55	12.10	15.10	18.10	22.50	27.40	31.80	34.40	40.40	46.40
m_w	min.	2.00	9.70	12.10	14.50	18.00	21.90	25.40	27.50	32.30	37.10
s	Reference dimension = max.	6.00	21.00	27.00	34.00	41.00	50.00	60.00	70.00	80.00	90.00
	min.	5.82	20.67	26.16	33.00	40.00	49.00	58.80	68.10	78.10	87.80

Note ^{a)} P is the pitch of the thread.

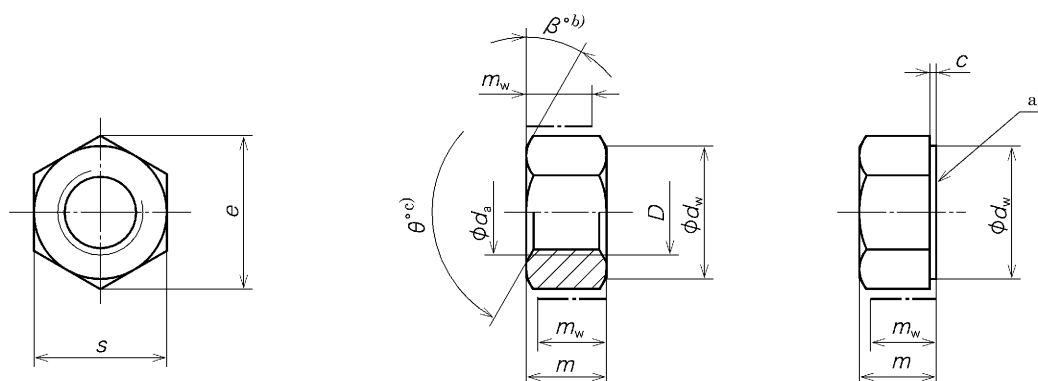
Table 5 Product specification of hexagon nut, style 1, coarse

Material		Steel	Stainless steel	Non-ferrous metal
General requirements	Applicable standard	JIS B 1099		
Thread	Tolerance class	6H		
	Applicable standard	JIS B 0205-4, JIS B 0209-1		
Mechanical properties	Property class	$D < M5$: as agreed $M5 \leq D \leq M39$: 6, 8, 10 $D > M39$: as agreed	$D \leq M24$: A2-70 A4-70 $M24 < D \leq M39$: A2-50, A4-50 $D > M39$: as agreed	Materials are specified in JIS B 1057.
	Applicable standard	$M5 \leq D \leq M39$: JIS B 1052-2 $D < M5$ and $D > M39$: as agreed (see Annex A of JIS B 1052-2)	$D \leq M39$: JIS B 1054-2 $D > M39$: as agreed	
Tolerance	Product grade	$D \leq M16$: A $D > M16$: B		
	Applicable standard	JIS B 1021		
Finish — Coating		As processed Requirements for electroplating are specified in JIS B 1044. Requirements for non-electrolytically applied zinc flake coatings are specified in JIS B 1046. Requirements for hot dip galvanized coatings are specified in JIS B 1048.	As processed A method for passivation is specified in JIS B 1047.	As processed Requirements for electroplating are specified in JIS B 1044.
		Additional requirements or other finishes or coatings shall be agreed between the purchaser and the manufacturer.		
Surface integrity		Limits for surface discontinuities are specified in JIS B 1042.	—	—
Acceptability		Acceptance inspection is specified in JIS B 1091.		

Table 6 Example of product designation

	Example
Product	Hexagon nut with thread M12, property class 8, and style 1
Designation	Hexagon nut — style 1, JIS B 1181 — ISO 4032 — M12 — 8

NOTE : Figure 1 and tables 3 to 6 are in accordance with **ISO 4032**.



- Notes a) Unless otherwise specified at the time of order, the nuts are delivered without washer-face.
 b) $\beta = 15^\circ$ to 30°
 c) $\theta = 90^\circ$ to 120°

Figure 2 Hexagon nut, style 1, fine

Table 7 Dimensions of hexagon nut, style 1, fine (first selection)

Unit: mm

Designation of thread $D \times P$		M8 $\times$ 1	M10 $\times$ 1	M12 $\times$ 1.5	M16 $\times$ 1.5	M20 $\times$ 1.5	M24 $\times$ 2
c	max.	0.60	0.60	0.60	0.80	0.80	0.80
	min.	0.15	0.15	0.15	0.20	0.20	0.20
d_a	max.	8.75	10.80	13.00	17.30	21.60	25.90
	min.	8.00	10.00	12.00	16.00	20.00	24.00
d_w	min.	11.63	14.63	16.63	22.49	27.7	33.25
e	min.	14.38	17.77	20.03	26.75	32.95	39.55
m	max.	6.80	8.40	10.80	14.80	18.00	21.50
	min.	6.44	8.04	10.37	14.10	16.90	20.20
m_w	min.	5.15	6.43	8.30	11.28	13.52	16.16
s	Reference dimension = max.	13.00	16.00	18.00	24.00	30.00	36.00
	min.	12.73	15.73	17.73	23.67	29.16	35.00

Designation of thread $D \times P$		M30 $\times$ 2	M36 $\times$ 3	M42 $\times$ 3	M48 $\times$ 3	M56 $\times$ 4	M64 $\times$ 4
c	max.	0.80	0.80	1.00	1.00	1.00	1.00
	min.	0.20	0.20	0.30	0.30	0.30	0.30
d_a	max.	32.40	38.90	45.40	51.80	60.50	69.10
	min.	30.00	36.00	42.00	48.00	56.00	64.00
d_w	min.	42.75	51.11	59.95	69.45	78.66	88.16
e	min.	50.85	60.79	71.30	82.60	93.56	104.86
m	max.	25.60	31.00	34.00	38.00	45.00	51.00
	min.	24.30	29.40	32.40	36.40	43.40	49.10
m_w	min.	19.44	23.52	25.92	29.12	34.72	39.28
s	Reference dimension = max.	46.00	55.00	65.00	75.00	85.00	95.00
	min.	45.00	53.80	63.10	73.10	82.80	92.80

Table 8 Dimensions of hexagon nut, style 1, fine (second selection)

Designation of thread $D \times P$		Unit: mm					
		M10 $\times$ 1.25	M12 $\times$ 1.25	M14 $\times$ 1.5	M18 $\times$ 1.5	M20 $\times$ 2	M22 $\times$ 1.5
c	max.	0.60	0.60	0.60	0.80	0.80	0.80
	min.	0.15	0.15	0.15	0.20	0.20	0.20
d_a	max.	10.80	13.00	15.10	19.50	21.60	23.70
	min.	10.00	12.00	14.00	18.00	20.00	22.00
d_w	min.	14.63	16.63	19.64	24.85	27.70	31.35
e	min.	17.77	20.03	23.36	29.56	32.95	37.29
m	max.	8.40	10.80	12.80	15.80	18.00	19.40
	min.	8.04	10.37	12.10	15.10	16.90	18.10
m_w	min.	6.43	8.30	9.68	12.08	13.52	14.48
s	Reference dimension = max.	16.00	18.00	21.00	27.00	30.00	34.00
	min.	15.73	17.73	20.67	26.16	29.16	33.00

Designation of thread $D \times P$		M27 $\times$ 2	M33 $\times$ 2	M39 $\times$ 3	M45 $\times$ 3	M52 $\times$ 4	M60 $\times$ 4
c	max.	0.80	0.80	1.00	1.00	1.00	1.00
	min.	0.20	0.20	0.30	0.30	0.30	0.30
d_a	max.	29.10	35.60	42.10	48.60	56.20	64.80
	min.	27.00	33.00	39.00	45.00	52.00	60.00
d_w	min.	38.00	46.55	55.86	64.70	74.20	83.41
e	min.	45.20	55.37	66.44	76.95	88.25	99.21
m	max.	23.80	28.70	33.40	36.00	42.00	48.00
	min.	22.50	27.40	31.80	34.40	40.40	46.40
m_w	min.	18.00	21.92	25.44	27.52	32.32	37.12
s	Reference dimension = max.	41.00	50.00	60.00	70.00	80.00	90.00
	min.	40.00	49.00	58.80	68.10	78.10	87.80

Table 9 Product specification of hexagon nut, style 1, fine

Material		Steel	Stainless steel	Non-ferrous metal
General requirements	Applicable standard	JIS B 1099		
Thread	Tolerance class	6H		
	Applicable standard	JIS B 0205-4, JIS B 0209-1		
Mechanical properties	Property class	$D \leq 39$ mm : 6, 8 $D \leq 16$ mm : 10 $D > 39$ mm : as agreed	$D \leq 24$ mm : A2-70 A4-70 24 mm $< D \leq 39$ mm : A2-50 A4-70 $D > 39$ mm : as agreed	Materials are specified in JIS B 1057 .
	Applicable standard	$D \leq 39$ mm : JIS B 1052-6 $D > 39$: as agreed (see Annex A of JIS B 1052-2)	$D \leq 39$ mm : JIS B 1054-2 $D > 39$ mm : as agreed	

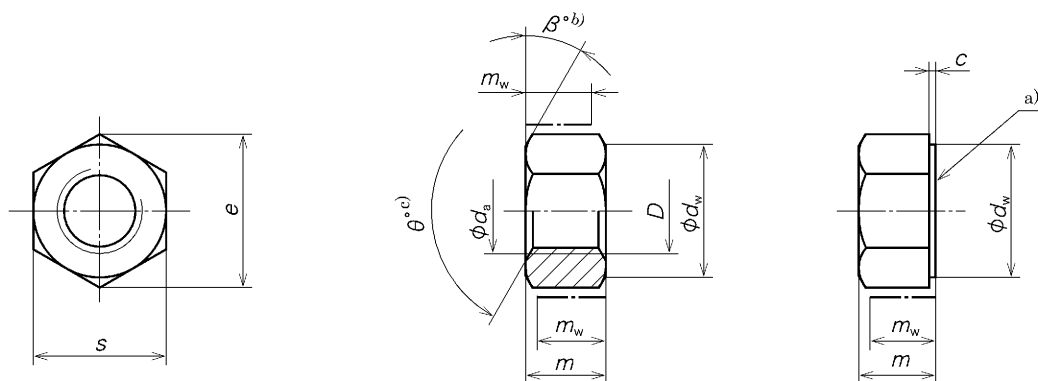
Table 9 (concluded)

Material		Steel	Stainless steel	Non-ferrous metal
Tolerance	Product grade	$D \leq 16 \text{ mm} : A$ $D > 16 \text{ mm} : B$		
	Applicable standard	JIS B 1021		
Finish — Coating		As processed Requirements for electroplating are specified in JIS B 1044 . Requirements for non-electrolytically applied zinc flake coatings are specified in JIS B 1046 .	As processed A method for passivation is specified in JIS B 1047 .	As processed Requirements for electroplating are specified in JIS B 1044 .
		Additional requirements or other finishes or coatings shall be agreed between the purchaser and the manufacturer.		
Surface integrity		Limits for surface discontinuities are specified in JIS B 1042 .	—	—
Acceptability		Acceptance inspection is specified in JIS B 1091 .		

Table 10 Example of product designation

	Example
Product	Hexagon nut with thread M16 × 1.5, property class 8, and style 1
Designation	Hexagon nut — style 1, JIS B 1181 — ISO 8673 — M16 × 1.5 — 8

NOTE : Figure 2 and tables 7 to 10 are in accordance with ISO 8673.



Notes a) Unless otherwise specified at the time of order, the nuts are delivered without washer-face.

b) $\beta = 15^\circ$ to 30°

c) $\theta = 90^\circ$ to 120°

Figure 3 Hexagon nut, style 2, coarse

Table 11 Dimensions of hexagon nut, style 2, coarse

Unit: mm

Designation of thread D		M5	M6	M8	M10	M12	(M14) ^{a)}
P ^{b)}		0.8	1	1.25	1.5	1.75	2
c	max.	0.50	0.50	0.60	0.60	0.60	0.60
d_a	max.	5.75	6.75	8.75	10.80	13.00	15.10
	min.	5.00	6.00	8.00	10.00	12.00	14.00
d_w	min.	6.90	8.90	11.60	14.60	16.60	19.60
e	min.	8.79	11.05	14.38	17.77	20.03	23.36
m	max.	5.10	5.70	7.50	9.30	12.00	14.10
	min.	4.80	5.40	7.14	8.94	11.57	13.40
m_w	min.	3.84	4.32	5.71	7.15	9.26	10.70
s	Reference dimension = max.	8.00	10.00	13.00	16.00	18.00	21.00
	min.	7.78	9.78	12.73	15.73	17.73	20.67

Designation of thread D		M16	M20	M24	M30	M36
P ^{b)}		2	2.5	3	3.5	4
c	max.	0.80	0.80	0.80	0.80	0.80
d_a	max.	17.30	21.60	25.90	32.40	38.90
	min.	16.00	20.00	24.00	30.00	36.00
d_w	min.	22.50	27.70	33.20	42.70	51.10
e	min.	26.75	32.95	39.55	50.85	60.79
m	max.	16.40	20.30	23.90	28.60	34.70
	min.	15.70	19.00	22.60	27.30	33.10
m_w	min.	12.60	15.20	18.10	21.80	26.50
s	Reference dimension = max.	24.00	30.00	36.00	46.00	55.00
	min.	23.67	29.16	35.00	45.00	53.80

Notes ^{a)} Thread designation shown in brackets should be avoided if possible.
^{b)} P is the pitch of the thread.

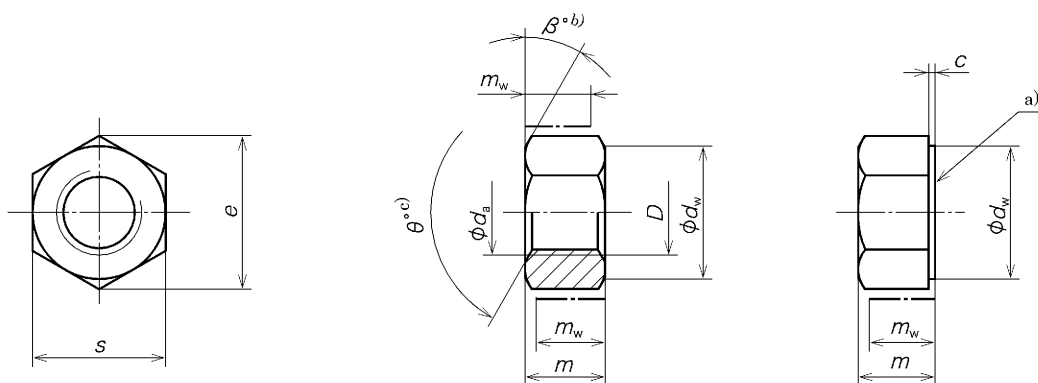
Table 12 Hexagon nut, style 2, coarse

Material		Steel
General re-quirements	Applicable standard	JIS B 1099
Thread	Tolerance class	6H
	Applicable standard	JIS B 0205-4, JIS B 0209-1
Mechanical properties	Property class	8, 9, 10, and 12
	Applicable standard	JIS B 1052-2
Tolerance	Product grade	$D \leq M16 : A$ $D > M16 : B$
	Applicable standard	JIS B 1021
Finish — Coating		As processed Requirements for electroplating are specified in JIS B 1044 . Requirements for non-electrolytically applied zinc flake coatings are specified in JIS B 1046 . Requirements for hot dip galvanized coatings are specified in JIS B 1048 . Additional requirements or other finishes or coatings shall be agreed between the purchaser and the manufacturer.
Surface integrity		Limits for surface discontinuities are specified in JIS B 1042 .
Acceptability		Acceptance inspection is specified in JIS B 1091 .

Table 13 Example of product designation

	Example
Product	Hexagon nut with thread M12, property class 9, and style 2
Designation	Hexagon nut — style 2, JIS B 1181 — ISO 4033 — M12 — 9

NOTE : Figure 3 and tables 11 to 13 are in accordance with **ISO 4033**.



- Notes a) Unless otherwise specified at the time of order, the nuts are delivered without washer-face.
b) $\beta = 15^\circ$ to 30°
c) $\theta = 90^\circ$ to 120°

Figure 4 Hexagon nut, style 2, fine