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Hexagon bolts with flange

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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 1189 : 2005** is replaced with this Standard.

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Hexagon bolts with flange

Introduction

This Japanese Industrial Standard has been prepared based on the second edition of **ISO 15071** published in 2011 and the second edition of **ISO 15072** published in 2012 without modifying the technical contents for corresponding parts (shape and dimensions, product specifications and example of product designation), but by also adding specifications not given in the said International Standards (marking, hexagon bolts with flange not specified in **ISO 15071** and **ISO 15072**) as unique contents to **JIS**.

The portions given dotted underlines and Annex JA are the matters not given in the original International Standards. A list of modifications with the explanations is given in Annex JB.

1 Scope

This Standard specifies the characteristics of hexagon bolts with flange (hereafter referred to as “bolts”).

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 0205-2**, **JIS B 0209-2**, **JIS B 1009**, **JIS B 1051** and **JIS B 1054-1** upon agreement between the purchaser and the manufacturer.

Annex JA gives specifications of hexagon bolts with flange not given in ISO 15071 and ISO 15072.

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

ISO 15071 : 2011 *Hexagon bolts with flange — Small series — Product grade A*

ISO 15072 : 2012 *Hexagon bolts with flange with metric fine pitch thread — Small series — Product grade A* (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 0205-2 *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 0209-2 *ISO general purpose metric screw threads — Tolerances — Part 2 : Limits of sizes for general purpose external and internal screw threads — Medium quality*

NOTE : Corresponding International Standard : ISO 965-2 : 1998 *ISO general purpose metric screw threads — Tolerances — Part 2 : Limits of sizes for general purpose external and internal screw threads — Medium quality* (IDT)

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

JIS B 1003 *Fasteners — Ends of parts with external ISO metric thread*

NOTE : Corresponding International Standard : ISO 4753 : 2011 *Fasteners — Ends of parts with external ISO metric thread* (IDT)

JIS B 1009 *Fasteners — Bolts, screws and studs — Nominal lengths and thread lengths*

NOTE : Corresponding International Standard : ISO 888 : 2012 *Fasteners — Bolts, screws and studs — Nominal lengths and thread lengths* (IDT)

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 1041 *Fasteners — Surface discontinuities — Part 1 : Bolts, screws and studs for general requirements*

JIS B 1043 *Fasteners — Surface discontinuities — Part 3 : Bolts, screws and studs for special requirements*

NOTE : Corresponding International Standard : ISO 6157-3 : 1988 *Fasteners — Surface discontinuities — Part 3 : Bolts, screws and studs for special requirements* (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 1051 *Mechanical properties of fasteners made of carbon steel and alloy steel — Bolts, screws and studs with specified property classes — Coarse thread and fine pitch thread*NOTE : Corresponding International Standard : ISO 898-1 : 2013 *Mechanical properties of fasteners made of carbon steel and alloy steel — Part 1 : Bolts, screws and studs with specified property classes — Coarse thread and fine pitch thread* (IDT)JIS B 1054-1 *Mechanical properties of corrosion-resistant stainless steel fasteners — Part 1 : Bolts, screws and studs*NOTE : Corresponding International Standard : ISO 3506-1 : 2009 *Mechanical properties of corrosion-resistant stainless steel fasteners — Part 1 : Bolts, screws and studs* (IDT)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)

3 Types

The types of bolts are as shown in table 1.

Table 1 Types of bolts

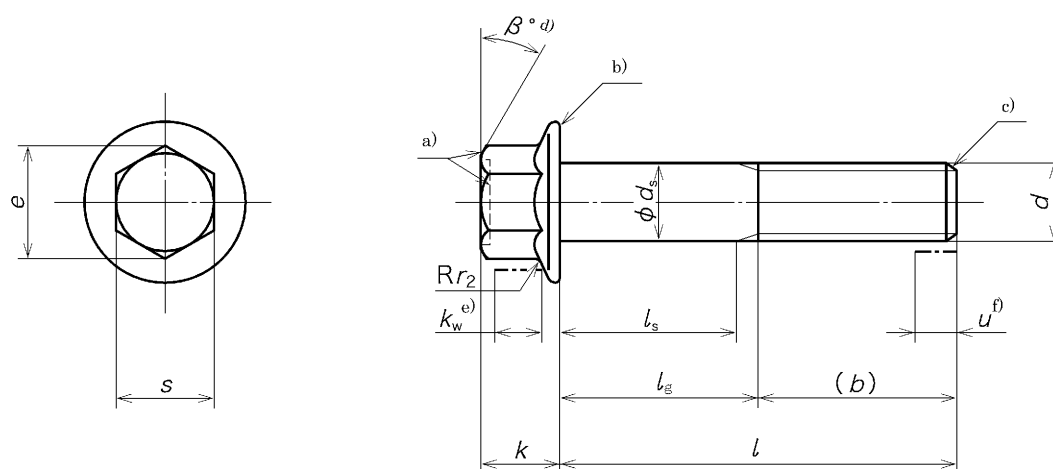
Type			Property class		Range of nominal diameter of thread	Corresponding International Standard (informative)
Bolt	Pitch of thread	Product grade	Steel	Stainless steel		
Bolts with full shank	Coarse thread	A	8.8, 9.8, 10.9	A2-70	5 mm to 16 mm	ISO 15071
Bolts with reduced shank	Fine pitch thread	A	8.8, 9.8, 10.9, 12.9/ <u>12.9</u>	A2-70	8 mm to 16 mm	ISO 15072

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

Shape and dimensions, product specifications and example of product designation of bolts shall be in accordance with table 2.

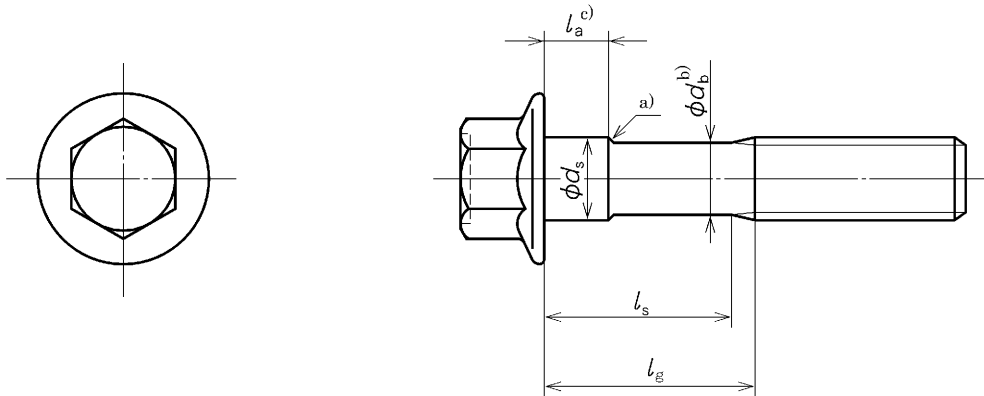
Table 2 Shape and dimensions, product specifications and example of product designation

Type			Shape and dimensions	Product specifications	Product designation (example)
Bolt	Pitch of thread	Product grade			
Bolts with full shank	Coarse thread	A	Figures 1, 2, 3 and table 3	Table 4	Table 5
Bolts with reduced shank	Fine pitch thread	A	Figures 1, 2, 3, 4 and table 6	Table 7	Table 8
Symbols and descriptions of dimensions shall be in accordance with JIS B 0143 . NOTE: For product designation, see JIS B 1010 .					



- Notes
- a) The top of the head shall be either full form or indented at the manufacturer's discretion and shall be either chamfered or rounded. The minimum diameter of the chamfer circle or start of rounding shall be the maximum width across flats minus 15 %. If the top of the head is indented, the periphery may be rounded.
 - b) Edge contour, at the discretion of the manufacturer.
 - c) Chamfer end, in accordance with **JIS B 1003**.
 - d) $\beta = 15^\circ$ to 30°
 - e) k_w is the wrenching height, see the supplementary description in tables 3 and 6.
 - f) Incomplete thread length $u \leq 2P$.

Figure 1 Bolt — bolt with full shank — standard type



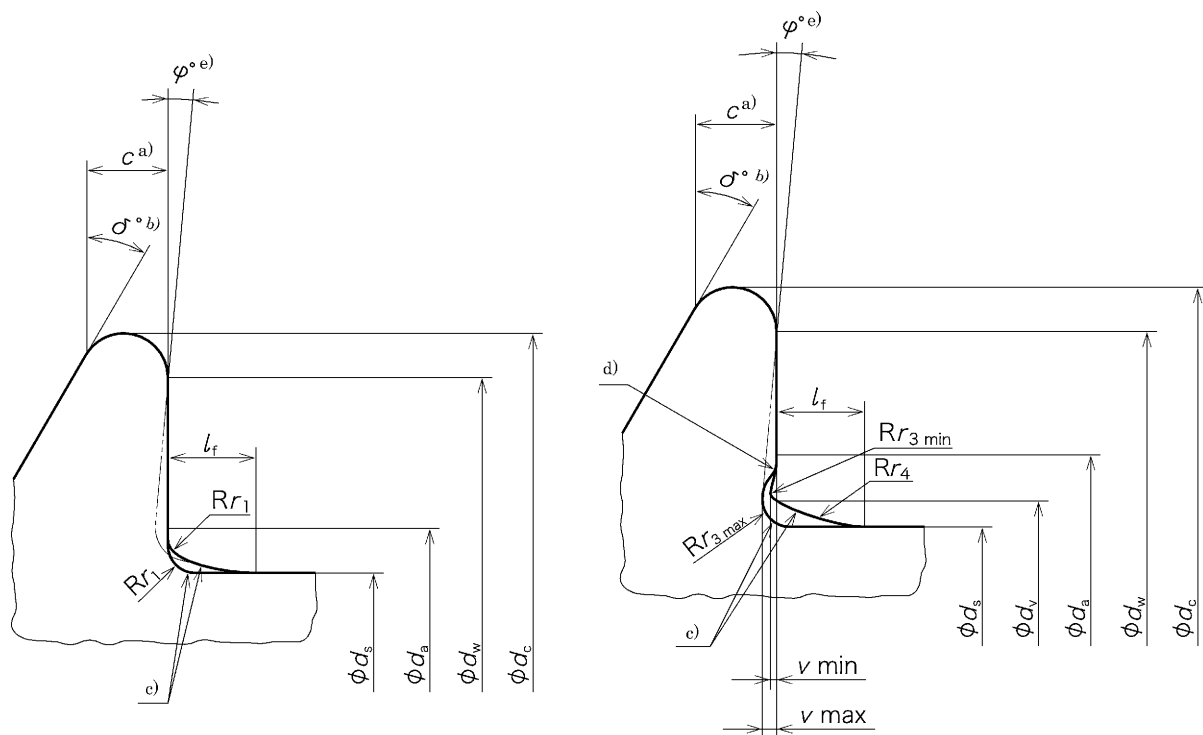
NOTE : For other dimensions, see figure 1.

Notes a) Rounded, chamfered or conical.

b) d_b is approximately equal to the pitch diameter (rolling diameter).

c) l_a shall be $0.5 d$ to $1 d$.

Figure 2 Bolt — bolt with reduced shank — Type R (upon request)



a) **Type F without undercut (standard type)**

b) **Type U with undercut (upon request or optional)**

Notes a) c is measured at d_w , min.

b) Angle of upper surface of flange $\delta = 15^\circ$ to 25° .

c) Maximum and minimum underhead fillet.

d) Junction of fillet with bearing surface to be a smooth blend.

e) Conical angle of bearing surface ϕ shall be $0.75^\circ \pm 0.5^\circ$.

Figure 3 Bolt — profiles of underhead (bearing surface area)